ENGINEERING NEWS-RECORD

Every seat's a good one under long-span trusses p.34

A McGRAW-HILL PUBLICATION

STEVENS RICE GS
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ANN ARBOR MICH

ARMCO PIPE
Helps Construction at Glen Canyon Dam

The Bureau of Reclamation's gigantic Glen Canyon Dam, on the upper Colorado River in northern Arizona is one of the world's most notable current construction projects.

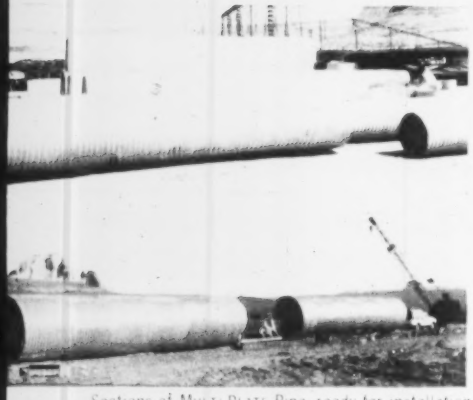
Armco Corrugated Metal Pipe, and Armco MULTI-PLATE® Pipe has been specified for various applications on this $325,000,000 project. Some of the more interesting uses are pictured on this page.

These same Armco Corrugated Metal Drainage Structures find wide use on the nation's interstate highway system; in municipal sewers; under railroads; and in industrial applications. For descriptive literature, write us, Armco Drainage & Metal Products, Inc., 5619 Curtis St., Middletown, Ohio. In Canada: Guelph, Ontario.

Half round Armco Conveyor Cover protects belt at this batching plant for housing project.

Stockpiles of Armco Pipe, in various diameters, that were installed as culverts under utility roads.

This 1000-foot long MULTI-PLATE Arch reclaim tunnel carries aggregate from storage piles 80 feet high over this structure.



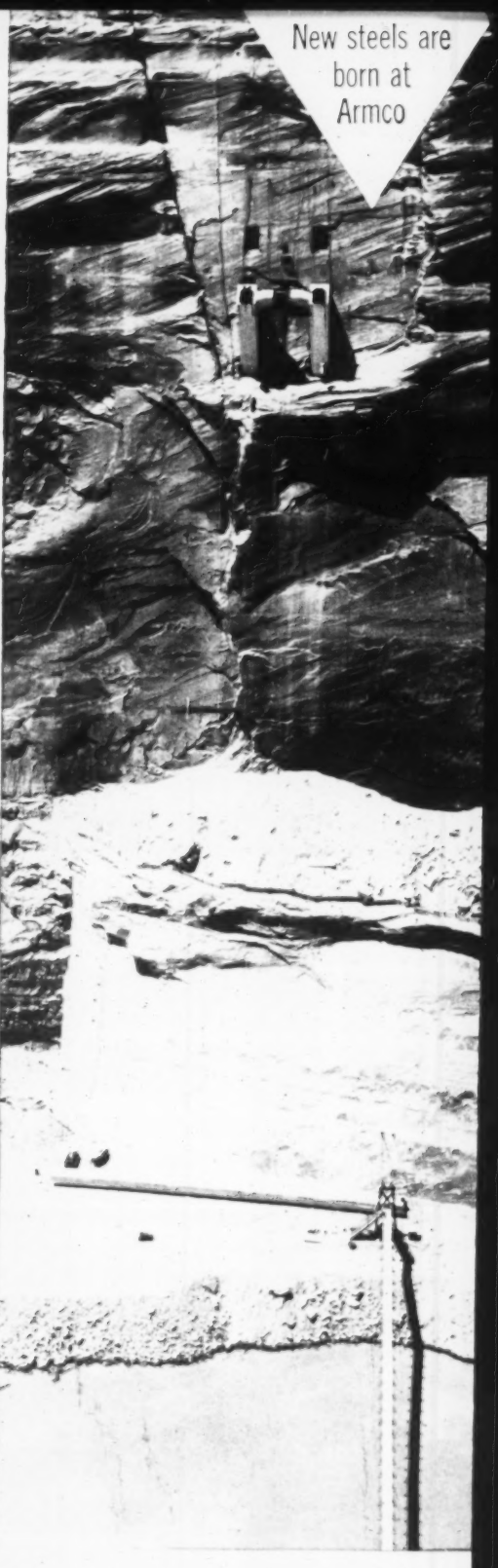
Sections of MULTI-PLATE Pipe, ready for installation as conveyor housings for excavated aggregate.

Twenty miles from dam site, a MULTI-PLATE Pipe is installed under access road.

At bottom of canyon was a 10-foot diameter Armco MULTI-PLATE Pipe that served as a safe walkway while bridge was constructed overhead.

Prime Contractor for Glen Canyon Dam and Power House: Merritt-Chapman & Scott Corporation

PHOTOS COURTESY BUREAU OF RECLAMATION



ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
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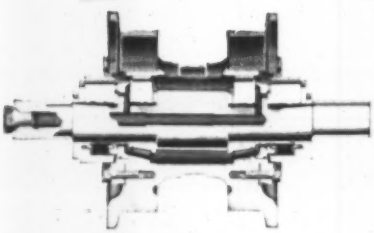
Why waste time greasing track on any of your tractors...

when you can have

Permanent Lubrication CERTIFIED

The Positive Seal PERMA-SAFE Wheel

for truck wheels, front idlers and support rollers on all models of Allis-Chalmers crawler tractors



Now... Allis-Chalmers announces PERMA-SAFE lubrication for all models in its crawler tractor line . . . climaxing more than 20 years of constant research and on-the-job experience with Positive Seal, tapered roller bearing design. Now you can forget about track-level greasing...convert that lost time to profit time. Allis-Chalmers, pioneer of extended lube intervals, lets you take this big step ahead with complete confidence.

See your nearby Allis-Chalmers dealer for the full story now. Allis-Chalmers Construction Machinery Division, Milwaukee 1, Wisconsin.

move ahead with ALLIS-CHALMERS

...power for a growing world

1

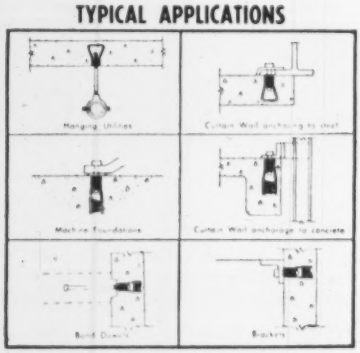
New Richmond Structural Concrete Inserts

With sufficient strength and safety for permanent fastening to concrete.

Available in ⅛" to 1⅛" diam. in strengths to 65,000 lbs. in 3,000 psi concrete

The *new* Richmond Structural Concrete Inserts are prefabricated from a special design which distributes the bolt stresses into the concrete for greater strength than any previously known device. Certified tests of these units in concrete at 3,000 p.s.i., verify this claim and permit design engineers to approach the problem of fastening appurtenances to structural concrete with greater security than has been possible in the past.

TYPICAL APPLICATIONS



The new Richmond Bulletin on Structural Concrete Inserts gives you complete information about these inserts and their varied uses. Send for it and the Richmond Handbook showing the full line of Tying Devices, Anchorages and Accessories for concrete construction. Write to:

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EIGHTY-FIFTH YEAR OF PUBLICATION

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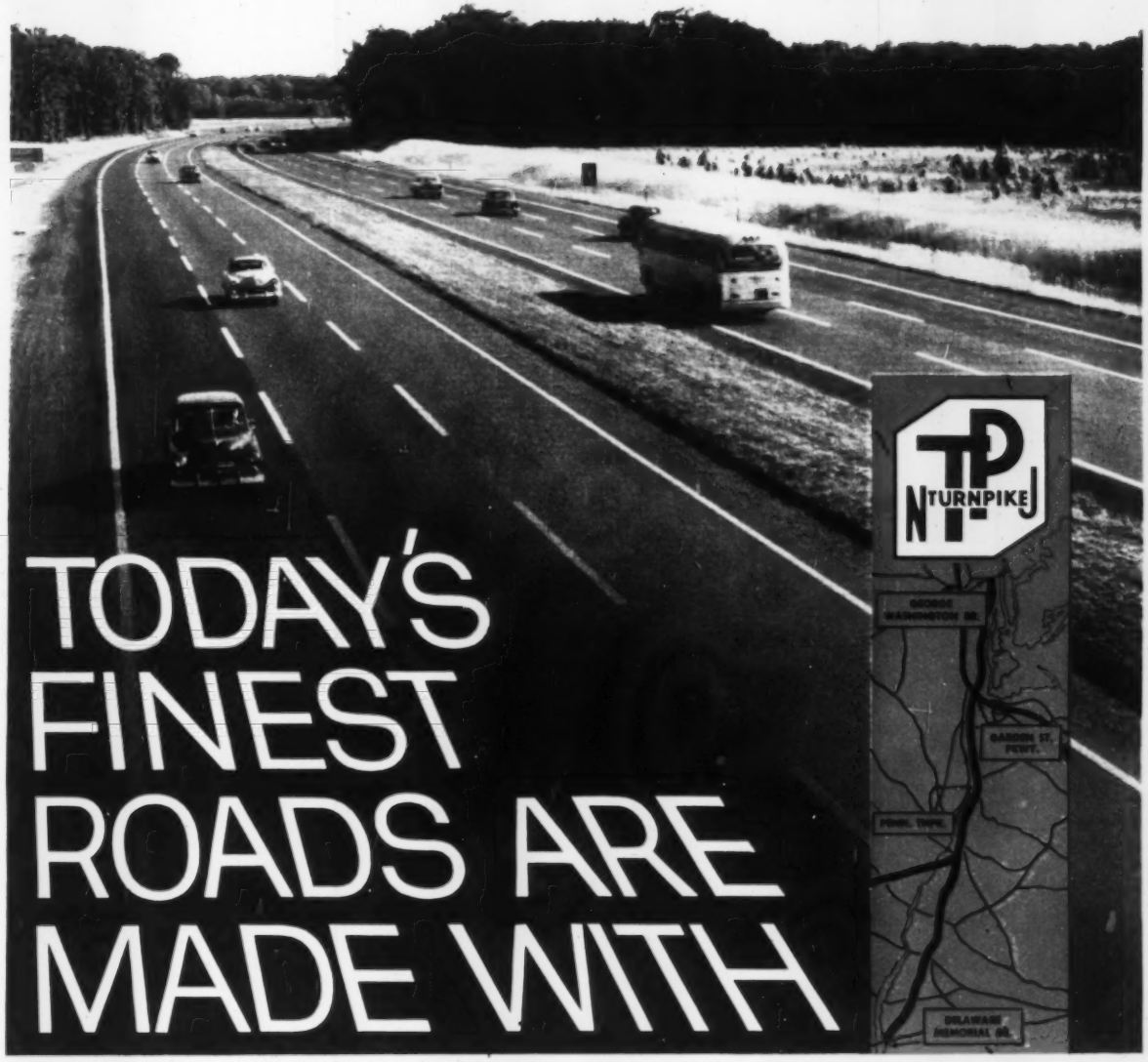

TODAY'S FINEST ROADS ARE MADE WITH ASPHALT

Produced by Esso Standard Oil Company

Asphalt furnished by Esso was used in the construction of the New Jersey Turnpike and saved more than $46,000 per mile over slab type pavement – and every year will bring added savings through lower maintenance costs. Consider these advantages in your road building plans:

Unsurpassed quality – Asphalt produced by Esso is specially refined to give pavements integral strength and flexibility – with maximum strength to resist heavy axle loads and extremes in temperature.

Faster construction time – Roads paved in ribbons are completed faster... do not require curing time, forms, and curing equipment.

Less capital tied up – Contractors can meet faster construction schedules and obtain contract payments more quickly.

Less interruption of traffic – On new construction as well as in resurfacing or widening of old roads, traffic can be routed over finished work without delay... for greater safety to workmen and motorists.

Any road, street or turnpike, paved with Asphalt costs less to build... costs less to maintain... gives a smoother, quieter ride... gives more miles, safety and comfort for the taxpayer's dollar over slab type pavements. For more information or technical assistance, write: Asphalt Products, Esso Standard Oil Company, 15 West 51st St., New York 19, N.Y.

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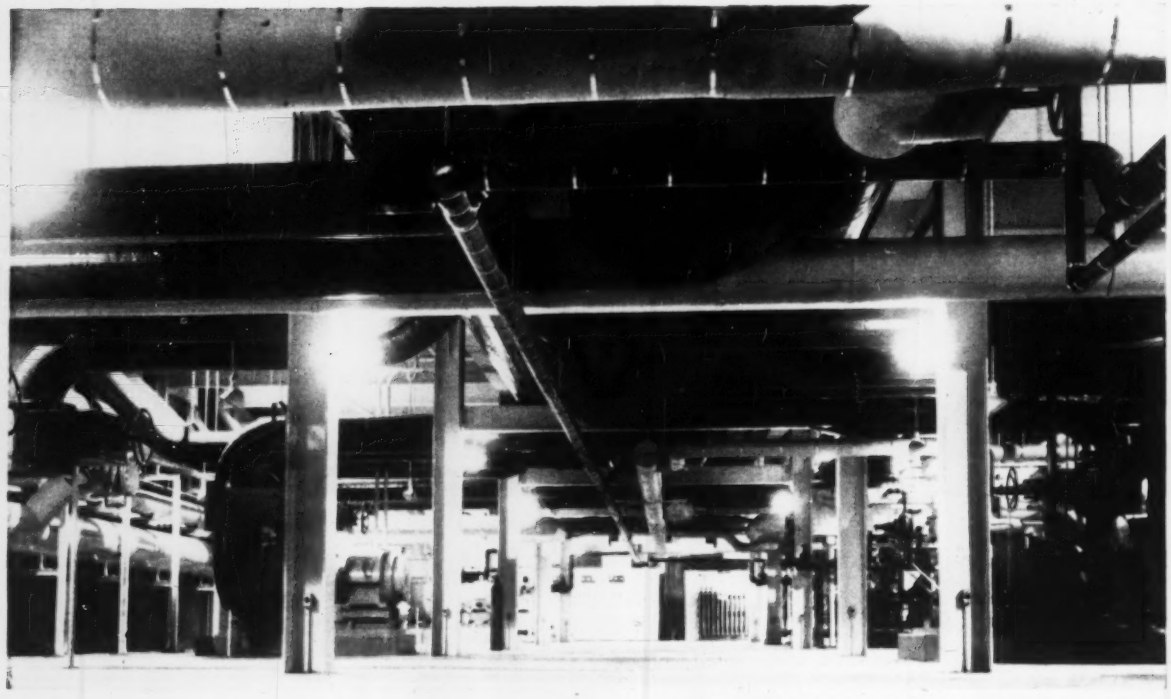
In industry after industry..."ESSO RESEARCH works wonders with oil"

The face of a commercial center



Architects and Engineers: Lane, Gamble and Associates; General Contractors: Robert E. McKee, Inc., and J. E. Morgan and Sons; Heating and Plumbing Contractors: Kieffer Plumbing and Heating Co., and Sam P. Wallace and Co.; Mechanical Engineers: Blum and Guerrero, and William K. Hall and Co.

. . . and its heart

THIS IS EXCHANGE PARK IN DALLAS, TEXAS—a 125-million dollar commercial development of five multi-story office buildings, a regional shopping center, a hotel and a complete medical center.

Over 300 tons of USS National Seamless Pipe in sizes from 2⅜" through 24" were used in the heating and cooling system which serves the center from a utility plant. Steam at 250 psi working pressure is generated in the utility plant by five 50,000-pound boilers whose combined steam capacity is 250,000 pounds. This plant also has a refrigeration capacity of 12,000 tons, supplied by a system capable of handling close to 34,000 gallons of condenser water per minute, and is capable of meeting the needs of a city with 36,000 people.

Do you need quality pipe for power, heating and air-conditioning installations? You'll get it when you ask for "NATIONAL PIPE." If you'd like further information or immediate assistance with your pipe problems, write to National Tube Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

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USS **National Tube Division of United States Steel**

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
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"The world's largest and most experienced manufacturer of tubular products"

B.F.Goodrich

Why contractor calls B.F.Goodrich tires "the best tires for the job!"

KILLIAN-HOUSE CO. constructs roads and bridges within a 100-mile radius of San Antonio, Texas. 145 pieces of rubber-tired equipment are at work, including 30 flat bed trucks, 10 scrapers, 24 dump trucks, 30 pick-ups, 12 road rollers and 12 water trucks. The company uses B.F.Goodrich tires on this fleet because, says Partner Jack House, "They are the best tires for the job."

For example: Traction Express tires average 75,000 miles of service where previous makes gave considerably less; Tractor Grader tires are being retreaded as many as 4 times; on the new Rock Service Tubeless tires above, the company estimates retreads will save them 30% over other makes.

The new B.F.Goodrich Rock Service tire has an enormous, double-chevron tread that defies rock cuts and bruises, grips the ground for full traction in forward or reverse. Under the tread is the B.F.Goodrich FLEX-RITE NYLON cord body that withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. This is why the FLEX-RITE NYLON body outwears even the extra-thick Rock Service tread, can be retreaded over and over.

See your B.F.Goodrich Smileage dealer today and find out how you can save on tires for all types of off-the-road jobs. He's listed under Tires in the Yellow Pages of your phone book. *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Enter the B.F.Goodrich Truck Tire Mileage Contest. You can win a Thunderbird or Corvette or one of 310 other prizes. See your B.F.Goodrich dealer for entry blanks.

Smileage!

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich *truck tires*

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Heavy Construction Operators

GO FORDWARD for greater payload... power.

"Our Ford trucks haul up to a ton-and-a-half more payload per trip"

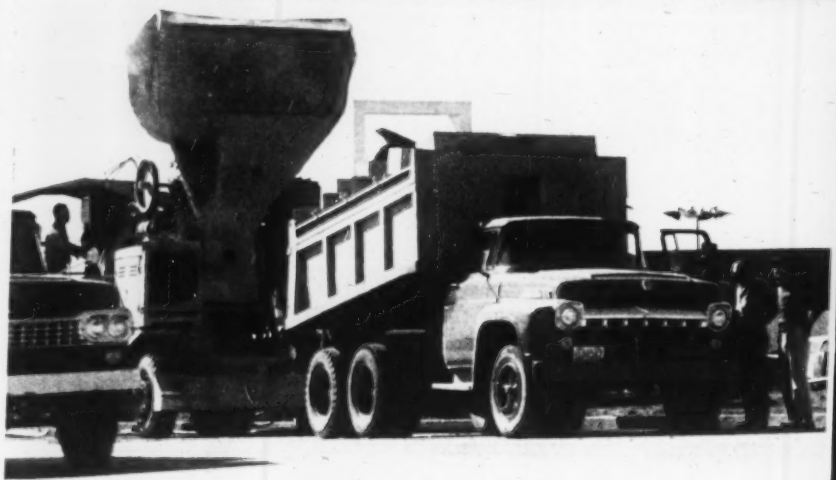
says William R. Collins, V.P.
William Collins and Sons, Fargo, N.D.

"We switched to Ford trucks in 1951 because we found we could haul 1½ tons more per trip. Now we have 124 Fords, including 80 T-700's. They're economical to operate, too—we get up to 6 miles per gallon. Our drivers like Ford's power steering and peppy 302 HD V-8 engine. We like Fords because we know we can always get Ford parts quickly if we need them. That means our trucks aren't down over one day, even on a major overhaul."

"We trade every two years and find that Ford trucks bring highest resale price"

says John McCormick, Sec.-Treas.
Northern Improvement Co., Fargo, N.D.

"We keep our Ford T-700's in top condition year round, and it pays off. We get a higher resale price when we trade every two years. Fords have the ability to perform under the rugged conditions in our work. Power steering on our tandem dumps makes them easy to handle on or off the road.



"Our drivers like Ford's power . . . they get heavy loads under way fast"

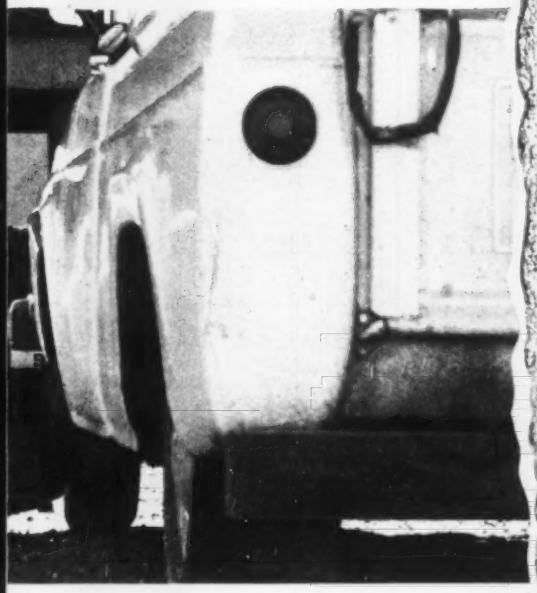
says George C. Wilson, General Superintendent
Schultz and Lindsay Construction Co., Fargo, N. D.

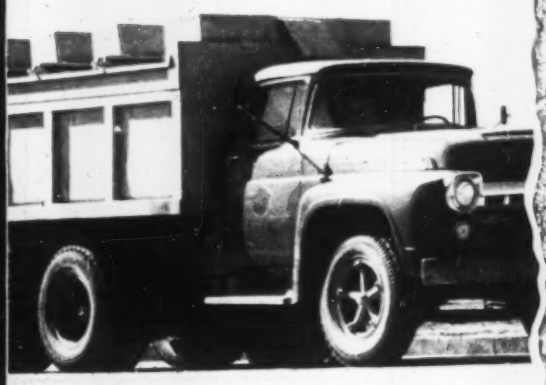
"Ford's HD power in our T-750's gets heavy loads under way fast . . . helps keep us on schedule. And we can haul bigger payloads doing it . . . up to a yard more, legally, every trip. We've never had frame trouble either. They're rugged, durable trucks and if we ever need Ford parts, we can always get them at the nearest town."

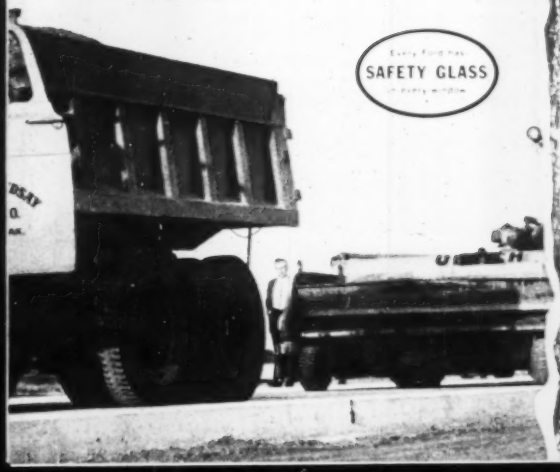
FORD TRUCKS COST LESS

LESS TO OWN... LESS TO RUN... LAST LONGER, TOO!

..resale value!







NOW!
CERTIFIED PROOF
FORD TRUCKS
COST LESS

All tests conducted and results
CERTIFIED
by America's foremost independent automotive research organization*
*NAME AVAILABLE ON REQUEST
Send inquiry to: P.O. Box 2687, Ford Division, Ford Motor Co., Detroit 31, Michigan

'59 Ford Pickups Win Economy Showdown U.S.A.

–average 25.2% better gas mileage!

Impartial tests of the 1959 pickup models of all six makes prove conclusively that Ford's ½-ton pickups equipped with Short Stroke Sixes are the economy champs for '59.

HOW TESTS WERE MADE

Standard six-cylinder models of the six leading half-ton pickups first were put through exhaustive road trials. All '59 trucks—Ford and competitive—were bought from dealers, just as you would buy them. After at least 600 miles break-in, all were brought up to manufacturer's recommended specifications.

The trucks were then tested – by America's leading independent automotive testing firm—at constant speeds of 30, 45 and 60 miles an hour. Next came stop-and-go tests, ranging from moderate city traffic to normal retail delivery operation. Acceleration rates were carefully timed in each gear to insure accurate results for all makes.

HOW NEW '59 SIXES RATE IN GAS MILEAGE

'59 FORD SIXES GIVE	25.2% more miles per gallon than Make "C"	31.1% more miles per gallon than Make "I"	9.6% more miles per gallon than Make "G"	42.6% more miles per gallon than Make "D"	22.0% more miles per gallon than Make "S"	25.2% more miles per gallon than the average of all makes

The '59 Ford Sixes, *in every test*, averaged more miles per gallon than every other make! Combining all tests, the '59 Fords led the average of all other '59 pickups by 25.2%.

WHAT'S THE SECRET?

How can a '59 Ford Six make four gallons do the work of five in other trucks?

First, of all pickup Sixes, only Ford has modern Short Stroke design. This new type of engine is basically far more efficient than long-stroke Sixes of other pickups. Example: Ford's Six delivers more usable horsepower than any other pickup Six.

Second, to this modern engine Ford has added a new economy carburetor. By metering fuel more precisely in both low- and high-speed ranges, Ford's new carburetor boosts gasoline mileage in every type of driving. And Ford's *Economy Carburetor* is *standard at no extra cost*.

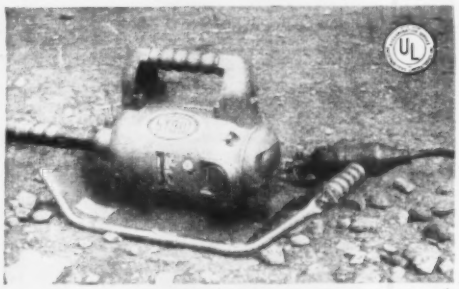
Your Ford Dealer now has the complete report of Economy Showdown U.S.A. Why not call or visit him today and get the whole story firsthand?

New • Rugged ELECTRIC VIBRATOR

DELIVERS 9000 VPM AT 2 HP

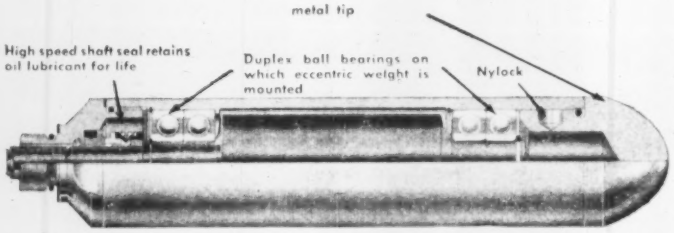
UL approved

This new electric concrete vibrator, developed by STOW MANUFACTURING COMPANY, Binghamton, N. Y., features a new lightweight vibrator head that delivers, at high amplitude, 9000 vibrations per minute to the mix.

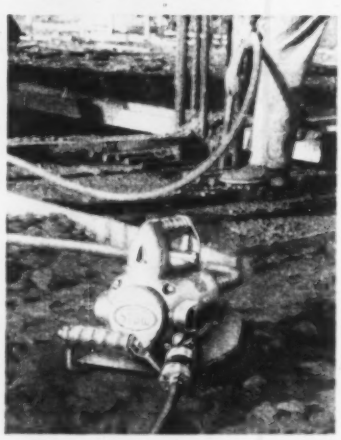


This vibrator, STOW model BU, is powered by a totally enclosed 2 HP Universal motor, operating on 115 volts AC or DC, 25 to 60 cycles. The motor is protected by a skid mounting, so arranged that the unit can be easily pulled around by the flexible shaft.

Take a look at this vibrator head. It is 10 inches long, and available in diameters of 1¾, 2 and 2½ inches, capable of 9000 VPM. Vibrations are achieved by use of an eccentric weight mounted in special high speed duplex ball bearings at each end. The outside of the head is case hardened, for extra long wear, and it has a replaceable steel tool tip. STOW estimates that these two improvements alone will double the life of the heads.


metal tip
High speed shaft seal retains oil lubricant for life
Duplex ball bearings on which eccentric weight is mounted
Nylock

Construction men report that they like the light weight, the long life, the low replacement cost, and the terrific wallop of these heads. Weight of the 1¾" head is about 5 lbs.; the 2" head about 7½ lbs.; the 2½" head, about 9 lbs. The cost of this head is less than ⅓ the cost of expensive motor-built-in type heads.



The 1¾" head is also available with a hard rubber tip for use where plywood forms are being used.

For more information about the complete line of STOW concrete electric and gasoline vibrators, vibrating screeds and rotary trowels, contact your STOW distributor, or write for STOW Catalog 580.

STOW MANUFACTURING CO.

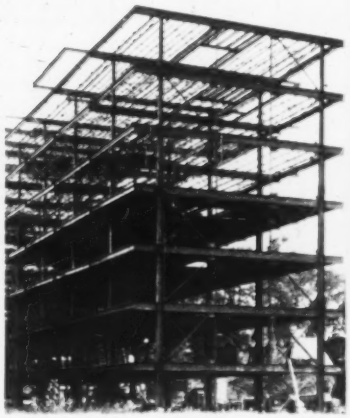
19 Shear St., Binghamton, New York

STOW MANUFACTURING CO.
Dept. C-4, 19 Shear St., Binghamton, N. Y.
Please send me Catalog 580 on Stow's line of Construction Equipment.

Name .....

Address ..... City ..... State .....

Reader Comment



Continuous Framing

SIR—I have read with interest "Continuous Framing Cuts Cost, Saves Time" by R. Evan Kennedy (ENR Jan. 8, p. 36). We have been engaged on the design of a similar structure, an eight-story apartment building, now complete, in Dorval, a suburb of Montreal.

This building has a cantilevered span to balcony edges of 8 ft and a center bay between columns spanning 30 ft, 4 in. Frames are 21 ft c-c. The total building length is 189 ft.

The frame is welded, the columns pass through two stories at a time, except for the top two stories where the columns are interrupted and beams pass instead. The floor is set on top and bottom chord connected joists spanning between the frames at 21 ft and spaced approximately 2 ft, 6 in. apart.

In order to insure the stability of the building against wind action, cross-bracing has been located at both ends and in one center frame.

Beam sizes are 18WF50 and 16WF45, designed with plastic hinges at column connections. All field connections are either high-tensile bolts or welding.

The amount of steel for this construction came to 8.7 lb per sq ft and proved to be less expensive than a similar structure in reinforced concrete. Substantial savings were obtained through lighter foundation work since the building had to be erected on piles because of soil conditions.

FELIX M. KRAUS
Consulting Engineer
Montreal, Canada

(Reader Comment continued p. 12)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

No pillow needed!

The cushion is built in!

Le Roi's new LB92 and LB75 paving breakers have a floating handle that takes away 55% of the spine-jarring rebound shock — but doesn't lose an ounce of rock-shattering impact. Now, full power can be applied to concrete breaking. Result: Lots of broken concrete — no broken backs!

There's less operator fatigue with the Le Roi shock-absorbing breakers than with other heavy-duty breakers. Production stays high — right to the end of the shift! These units are built like a rhino outside to absorb punishment — and like a watch inside to operate efficiently with low air consumption.

Available as a paving breaker, sheeting driver, or spike driver—at your nearby Le Roi distributor *now*! Try them out — see the difference for yourself. Or write Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

LE ROI
NEWMATIC®
AIR TOOLS

AT-804

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

CUT COSTS

with pressure-creosoted poles and lumber posts

The great economy, extra durability and easy handling of pressure-creosoted wood mean lower costs for all types of highway construction. Pressure-creosoted poles, posts and lumber in exposed structures have served 40 years and more—proving creosote's superiority! For bridges, culverts, electric light poles and guard railing, pressure-creosoted timber is today's outstanding material.

- **CHEMICAL STABILITY:** Creosote does not decompose or react chemically with soil water.
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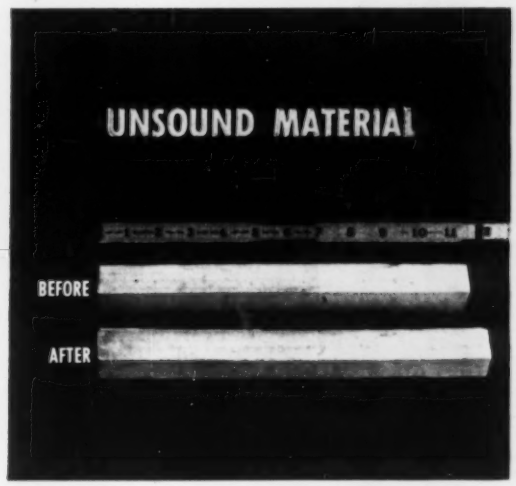

In these autoclave tests, neat cement bars were exposed to 295 lbs. steam pressure, 420°F., for 3 hours. Left: The two bars are both Brixment. Note that it is sound — it has not expanded. Right: The two bars were made of one part portland cement and one part of a lime which does not meet the autoclave test. Note the expansion — proof of unsoundness.

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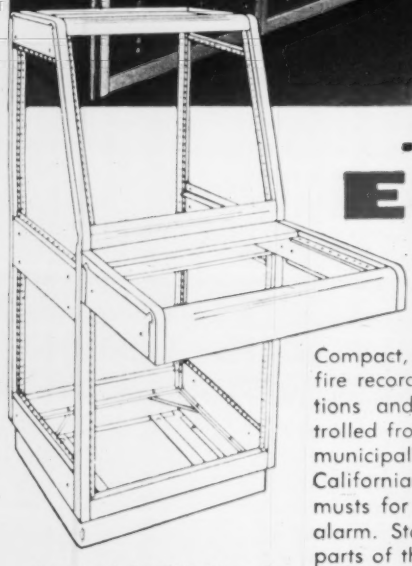

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. . . Reader Comment

Fire Protection Needed

SIR—Your article "How Should We Plan Our Cities?" (ENR Dec. 18, 1958 p.21) emphasizes the lack of recognition of fire hazards by the building industry.

When a National Construction Industry Conference is held, where 300 well-qualified social scientists, architects, engineers, contractors, and planners spend days discussing "human needs in cities of the future" and fire protection is not mentioned, it appears evident that the protection against loss of life and property by fire on a voluntary basis is not considered of sufficient importance to technical groups guiding this field.

This lack of appreciation of the significance of fire hazards is also evident by the lack of reference to fire hazards when new and novel building materials in construction are discussed. Architects and engineers, perusing such literature, design new buildings and remodel old buildings using new materials and construction methods without regard to fire performance.

Cooperation is needed between members of the construction industry and those in the fire protection field.

Publications like ENGINEERING NEWS-RECORD have a responsibility to develop an awareness of the need to reduce the loss of life in fires, like the recent one in Chicago, and loss of life and property occurring almost daily.

A. J. STEINER
Managing Engineer,
Fire Protection Department
Underwriters Laboratories, Inc.,
Chicago

Extensive, Not Expensive

A type-setting slip in using a "p" for a "t" gave a wrong meaning to a sentence in the news items relating to the Louisville-New Albany bridge to be built over the Ohio River (ENR Jan 8, p. 23). The sentence read "Expensive welding and T-I steel will be used in the arch ties." Obviously, the first word should have been "Extensive."

For Your Calendar . . .

35th Annual Convention of the Association of Highway Officials of the North Atlantic States, Hotel Traymore, Atlantic City, N. J., Mar. 18-20.

Mississippi Valley Conference of State Highway Departments, Annual Convention, Edgewater Beach Hotel, Chicago, Ill., Mar. 19-21.

Canadian Construction Association, Royal York Hotel, Toronto, Can., Mar. 20.

21st Annual American Power Conference, Hotel Sherman, Chicago, Ill., Mar. 31-Apr. 2.

8th Annual Meeting of the Building Research Institute, Penn-Sheraton Hotel, Pittsburgh, Pa., Apr. 6-8.

Wisconsin Triennial Engineering Exposition, University of Wisconsin, College of Engineering, Madison, Wis., Apr. 10-12.

Automotive Engineers 10th Annual Earthmoving Industry Conference, Pere Marquette Hotel, Peoria, Ill., Apr. 14-15.

New York's 29th Annual Safety Convention and Exposition, Hotel Statler, New York City, Apr. 13.

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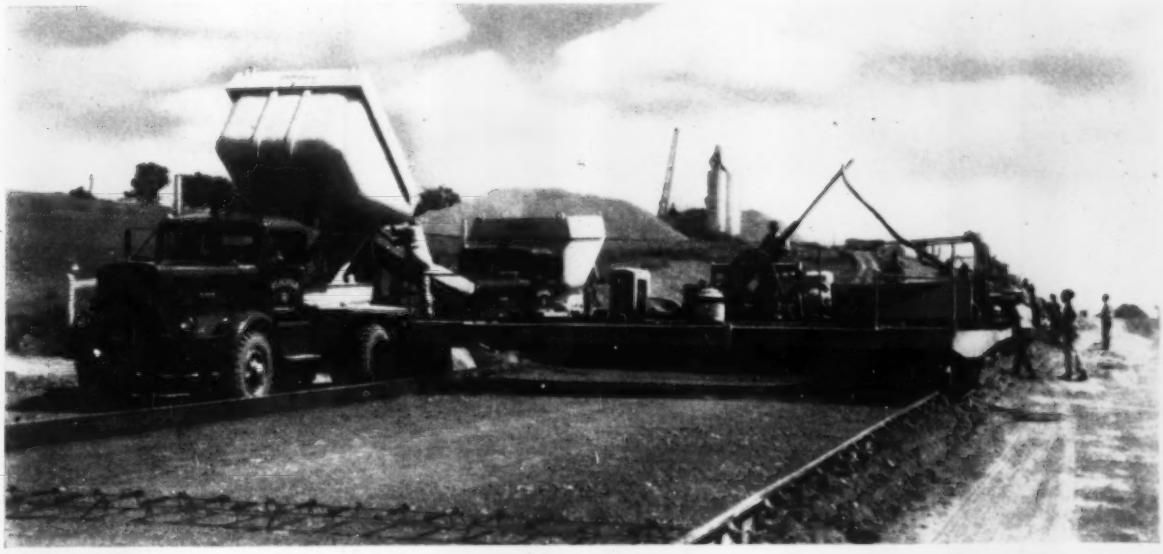

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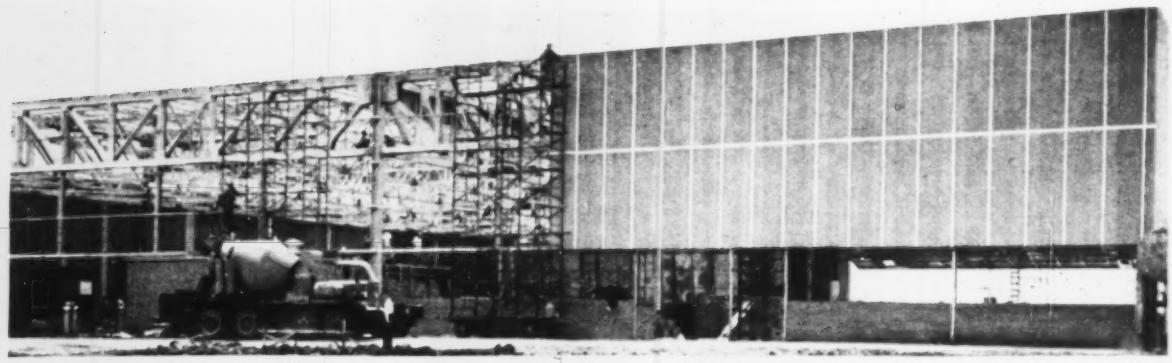

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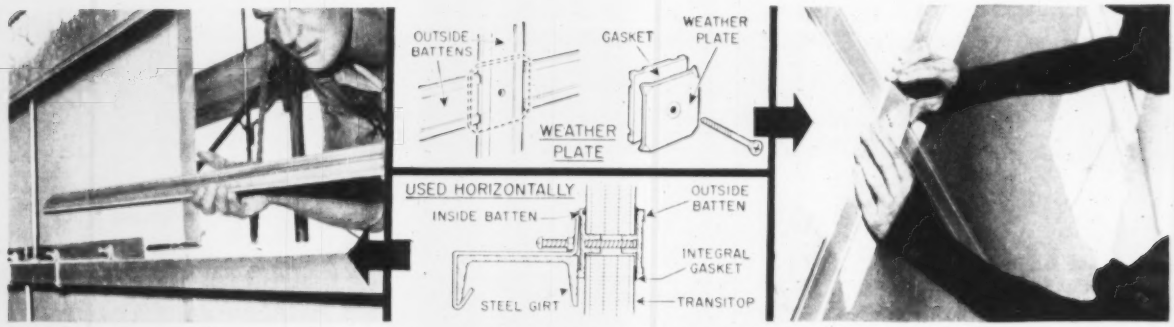

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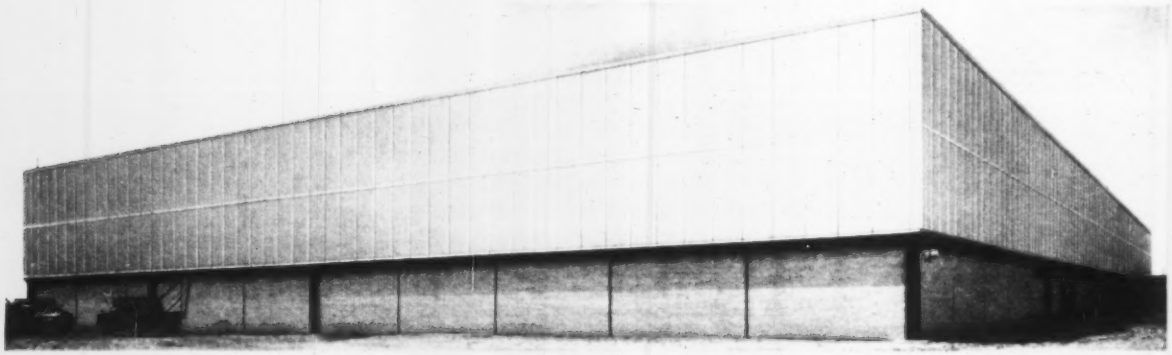

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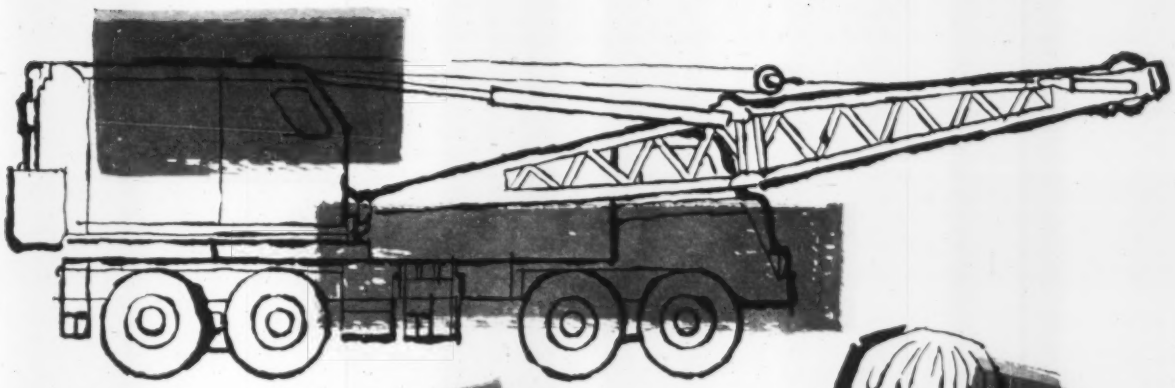

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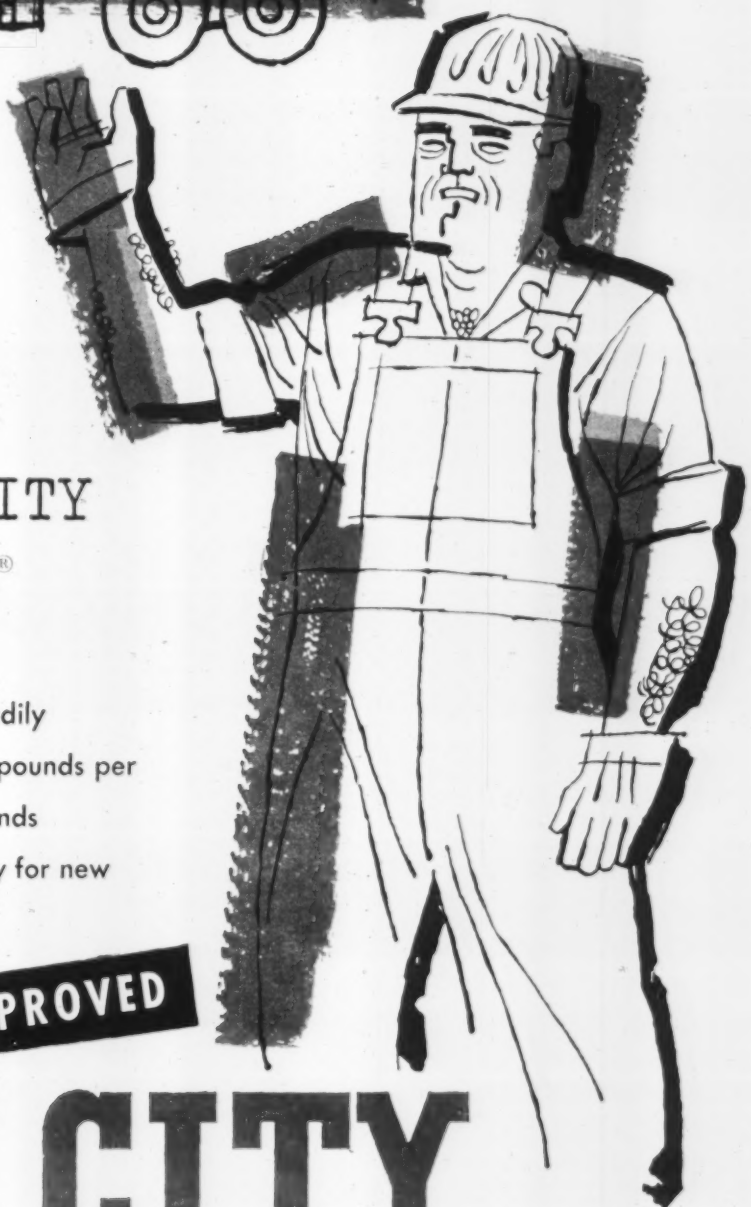

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

INDUSTRIAL SPURT—Over $353 million worth of proposed industrial plants went to design boards last month. That's better than double the January volume and the second best month in more than a year. Meanwhile a heavy influx of private housing projects, added to the coming industrial plants, pushed the backlog of future construction projects up to $114.7 billion by the end of February. That's 2% better than a year ago.

ANOTHER PRICE RISE?—Chances are good that the price of copper tubing will go up. Custom smelters last week raised their price ½ cent to 31½ cents. While price of tubing is not pegged directly to smelter prices, an increase in the raw material price is normally followed by a boost in all finished products.

FOR THE MAN WHO HAS EVERYTHING—A Phoenix homebuilder includes a 10x12-ft basement bomb shelter as standard equipment in his $45,000 to $50,000 houses. The shelters are encased on top and sides with 10-in. reinforced concrete. Ceilings are 8 ft high. The developer, E. V. Thorne Construction Co., says the shelters' steel doors will not blow out.

DAM CRITICS GET THEIR SAY—Critics of the Army Engineers' report on development of the Columbia River Basin will get their big chance this week at four public hearings to be held by the Board of Engineers for Rivers and Harbors. Chief targets probably will be proposals for High Mountain Sheep, Knowles and Libby dams.

PLYWOOD FIREPROOFING—Some eyebrows may be raised in fire underwriting circles, but Philadelphia is going ahead with a scheme for enclosing stairways in 69 of its older public schools at low cost. Its Board of Building Standards has authorized plywood enclosures coated with fire-retarding paint.

1960 WILL JUST BE 1960—The proposal to make 1960 the World Construction Year is dead. The American Society of Civil Engineers and the American Institute of Architects have withdrawn their support. Chief promoter of the idea was Northwestern University (ENR Dec. 19, 1957, p. 23).

OOPS!—A Norfolk homebuilder missed his building sites by two blocks and constructed three houses on city property. "He turned right when he should have turned left," said one city councilman. There was nothing to do but "bail him out," said Mayor Fred W. Duckworth. So the City Council accepted an offer from the builder, Karen Corp., of $1,800 for the three lots.

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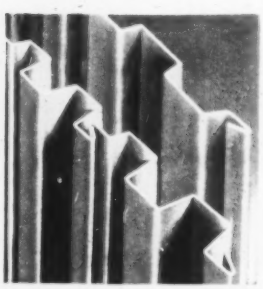

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WASHINGTON OBSERVER

- Debate over economic policy is growing
- GOP wants more time on labor reform
- Democrats want water resources policy

● **The rift over basic economic policy grows sharper.** The Congressional Joint Economic Committee's annual report attacks President Eisenhower on a variety of counts. It says, for example, the White House is overstating extent of recovery from the 1957-58 recession, that the President worries too much about prices and too little about growth.

Democrats make a pitch for easy money, cite housing to support their case. Legislative action to stimulate FHA and VA housing, the report says, cannot offset adverse effects of "monetary stringency."

The Administration will pay little heed. Even while the joint committee report was in preparation, the Federal Reserve Board moved toward tighter money. Technically, the board is beyond any Administration control, but note that its tight money policy has enthusiastic White House-Treasury support.

The joint committee wants a look at highway building plans. Without specifying, it says expensive roadbuilding suitable only for populous areas is being done in areas where less expensive highway construction would be sufficient.

—

● **Labor reform legislation has hit a snag in Congress.** Two weeks ago there was expectation that the relatively mild Kennedy-Ervin bill would sail through the Senate in March, before the Easter recess. No more. Passage of any labor bill now seems many weeks distant.

Republican strategy is behind it. GOP Senators Carl E. Mundt (S.D.) and Carl T. Curtis (Neb.) have succeeded in forcing Sen. John F. Kennedy (D., Mass.) to reopen subcommittee hearings, ostensibly on their own counterproposals. The Mundt-Curtis approach actually has no chance. What the Republicans really want is time. They think public sentiment may build up enough to improve chances for getting the Administration's key ideas written into the legislation—that is, embargoes against blackmail picketing and secondary boycotts.

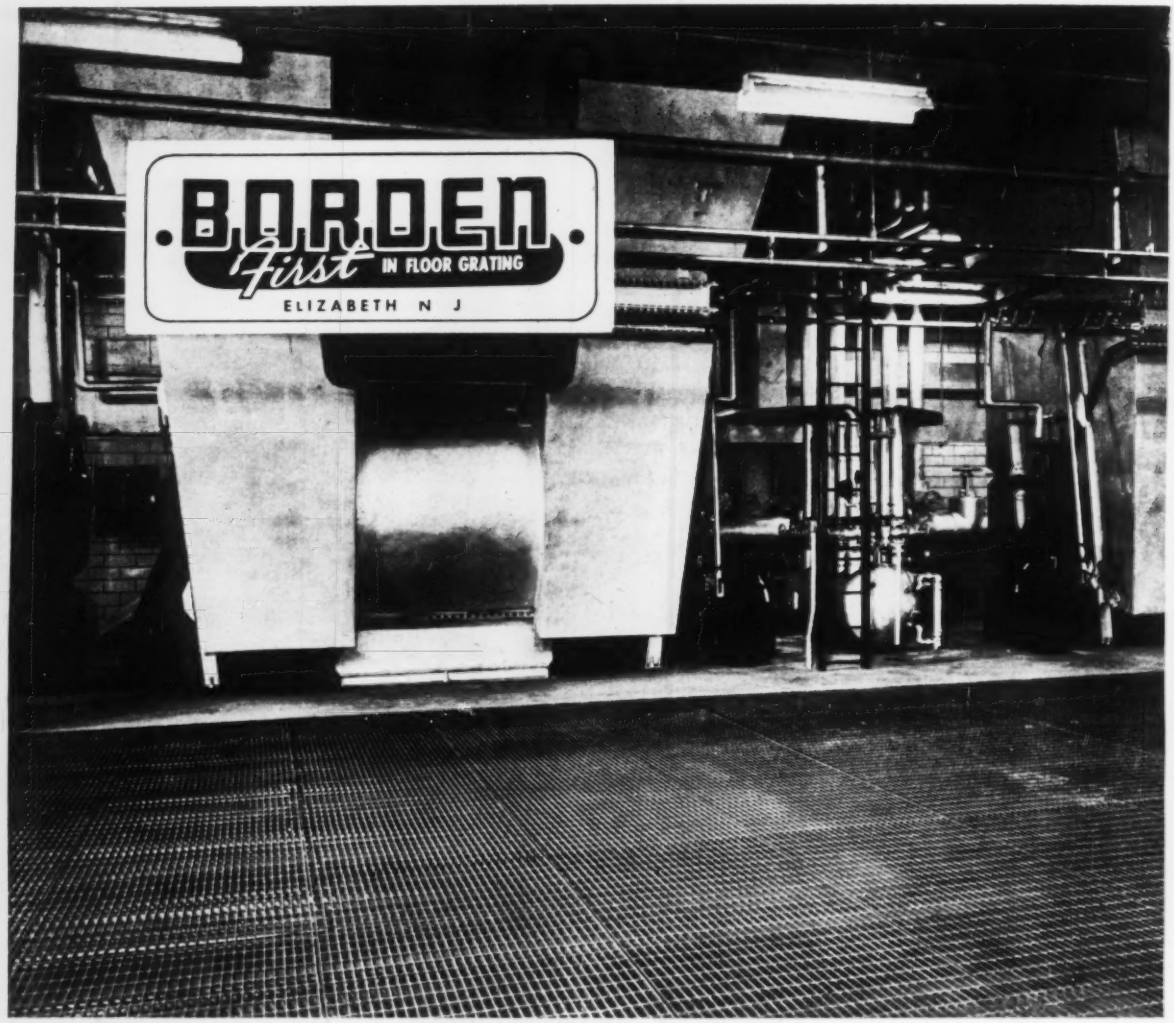
—

● **Congressional Democrats are trying to write a national water resources policy.**

The House Interior Committee is gathering comment from all state governments and federal agencies on a proposal to set up rules for creation of river basin commissions. Hearings on a broad measure—including provisions for comparing one basin's merits with another—probably will be delayed until next year. But spade work is under way.

The Senate Interior Committee this week began hearings on a bill by Sen. Mike Mansfield (D., Mont.) to create a joint committee to assess all water project needs to 1980, and provide authorizations.

Ex-President Truman prepared a detailed water policy statement and President Eisenhower had a Cabinet committee prepare a much abbreviated version. But neither resulted in specific proposals to Congress.



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ENGINEERING
NEWS-RECORD

Imported Steel Makes Headway

- **Contractors are finding bargains in a variety of European and Japanese steel products underselling domestic steel by 5% to 35%.**
- **Small steel companies, worried by the trend, are leading the push for higher tariff rates and restrictive state legislation.**

Increasing imports of good-quality, low-priced steel products from Europe and, more recently, Japan are giving some construction men good buys, some U. S. steel producers, grey hairs.

Imported steel products are finding no dearth of buyers along the Atlantic, Pacific and Gulf coasts at prices ranging from 5% to 35% below domestic products. And the influx is bound to grow when the St. Lawrence Seaway opens the Midwest to shipping this spring. Products include nails, spikes, brads, galvanized wire fencing, fence wire, reinforcing bars, fasteners, wire strand and wire rope.

Most worried by this trend are the small steel producers. The U. S. Tariff Commission last week opened hearings on petitions brought by four of them seeking higher import duties on steel wire products.

The big steel companies are better able to stand competition in small products. But they are nevertheless citing the problem as one argument against higher labor costs as they gird for next month's round of labor negotiations. And Kaiser Steel Co. has joined the Committee on Import-Export Policy, a group seeking high tariff protection.

In the states, pressure grows for laws to curb foreign goods. A dozen states have already passed such legislation; others are considering it. The U. S. Department of Commerce has not yet decided whether state laws aimed at foreign materials can be applied to federally aided highway construction.

Although price is the foreign manufacturers' best weapon, they don't sacrifice quality. It is good, say U. S. construction and steel industry spokesmen.

Here are the figures on the growth of some steel product imports:

Shipments of reinforcing bars by domestic producers went from 1.8 million tons in 1953 to 2.3 million tons in 1957—an increase of 24.4%. In the same period, imports rose by 48.7%—107,819 tons in 1953 to 160,371 tons in 1957.

More impressive is the share of the market captured by foreign imports. In 1953, imports were 5.8% of domestic shipments. At the end of 1957, imports were equal to 7% of domestic shipments.

But by the end of the first 10 months of 1958, imports of reinforcing bars amounted to 21.6% of domestic shipments in the same period.

Imports of nails compared with domestic shipments show even bigger changes. In 1953, domestic producers shipped 528,935 tons. In 1957, shipments totaled only 447,301 tons, a drop of 15.4%.

Imports climbed proportionately. In 1953, they totaled 39,265 tons, or 7.4% of domestic shipments. In 1957, nail imports were up 244% to 134,838 tons, or 30.1% of domestic shipments. And in the first 10 months of last year imports of 156,271 tons amounted to 42.4% of domestic shipments. (Figures are reported by the U. S. Department of Commerce and Labor.)

Stress-relieved strand from Europe is also cutting deeper into the U. S. market. A manufacturer estimates that 33,000 tons of this material were consumed in the U. S. in 1958. Of that, 7,000 tons were imported.

European strand undersells U. S. strand by about 15%. Recently Japanese strand has been entering the country at a price level 20% to 28% below the domestic counterpart.

Foreign concerns are rapidly improving and enlarging their supplier and sales forces here. As the suppliers' quality and numbers increase, more potential buyers of construction will become familiar with products now considered "unknown quantities."

There is some reluctance among engineers and contractors to use foreign products, despite the cost advantage. One engineer summed up the feeling of others this way: "I know that the foreign product is good, but I just feel more comfortable when my job is being built with U. S. goods."

Many engineers agree the price is tempting. Imported reinforcing bars and wire strand, for example, undersell the domestic product by anywhere from 5% to 35%, depending on the job, the area it is in or the supply situation. And they concede that foreign producers make a good product. But some have strong reservations about the consistency of quality.

Some engineers say there may be some brittle bars. And strand may vary in quality. Manufacturers of strand, and some fabricators, say trouble often develops at welds on foreign material under tension. Or it is more inclined to twist and not lie straight. In some cases, when it is cut, the severed ends fly open.

Fabricators say they sometimes run into delivery problems with foreign products. A company using strand in great quantities may have to order ahead by three to four months.

Foreign materials' price advantage is generally limited to lighter steel goods. Heavy structural steel from Europe may have a lower basic price, but handling and shipping costs after arrival in this country push the price closer to that of the U. S. product.

Pressure for tariff protection is coming generally from smaller companies. But higher barriers are not likely in the near future.

Commodity and trade experts in Washington say there are no signs that the domestic steel industry as whole needs or, indeed, wants protection. It has a large and traditional stake in world trade, they point out. And if U. S. tariff barriers go up, other countries might tighten their restrictions. This could hurt the U. S. steel industry, which exports more than it imports.

The outlook is for continued bargains in a wide variety of imported steel products.

Steel Strike? Better Get Prepared

Steel mills are having little difficulty filling orders for construction steel. And steel warehouses now have the most complete, well-rounded steel inventories on record.

But contractors should be preparing for the possibility of a midyear steel strike. They should have at their job sites by June 30 the mill shipments they estimate will be needed for third quarter construction schedules. Miscellaneous items ordinarily bought from the warehouses need not be stockpiled. These sources should have adequate supplies for delivery as required, warehouse sources report.

Although a strike doesn't seem quite as likely as it did a month ago, chances are still 50-50. Both industry and labor are keeping a weather eye on the progress of recovery and general economic conditions. Both sides will be reluctant to do anything that could be tagged "inflationary."

Despite the generally good production and warehouse inventory situation, there are signs of an order stretch-out looming in some steel-producing areas. There are even indications of steel allocation for the second quarter.

Birmingham, New York and St. Louis report the first noticeable slowdown, an ENR survey shows. Structural shapes and reinforcing bars are now on a 60- to 75-day delivery schedule by Birmingham mills. The schedule had been 15 to 30 days.

New York warehouses will be on allocation in the second quarter, with reinforcing bars on a 45-day delivery basis from the mills.

In St. Louis, mills are delivering in 60 to 90 days.

A slowdown in steel mill deliveries is also reported in Atlanta, Minneapolis, Detroit and Toronto. Minneapolis reports some slowing of mill deliveries of structural shapes and sheetpiling, but not reinforcing bars.

Mills are a week or two behind deliveries of structural shapes in Toronto, but bars and piling deliveries are normal.

No evidence of tightness is reported for Boston, Cincinnati, Chicago, Cleveland, Seattle, Kansas City and Los Angeles.

The warehouse picture is bright, but if a strike does shut the mills, contractors should not expect the warehouses to fill the gap completely. Contractors who try to shift from mill buying to warehouse buying probably would be turned away in a strike period, according to Robert G. Welch, vice president of the American Steel Warehouse Association.

Those contractors who regularly buy from warehouses, however, should have no trouble obtaining needed steel items.

Warehouses are continuing to build up their inventories to meet the rising demand. Sales are up more than the 20% forecast by the association in January, when first quarter sales were predicted to top one year ago.

By June 30, warehouse inventories are expected to be close to 3.7 million tons, compared with the 2.5 million tons at the time the last steel strike hit in 1956. Warehouse stocks of structural steel were exhausted by the end of that strike.

The larger stocks and smaller structural steel demand mean it's unlikely that warehouses would be cleaned out by a four- or six-week strike, if one should come.

In the areas where some tightening of mill deliveries is noted, the warehouses are carrying adequate supplies. In New York, St. Louis, Atlanta, Minneapolis, Detroit and Toronto, warehouses are carrying large stocks. In Atlanta, warehouses report some signs of "scare buying." They say this could delay deliveries within the next 30 days.

The scare buying reflected the pessimism over the likelihood of a steel strike that was prevalent only three weeks to a month ago.

Even should a strike come, both labor and management think it would be a short one, a matter of a few days at worst.

This Is a Shopping Center—Texas-Style

Dallas shopping center has 41 stores, parks 7,000 cars.

Big Town, a regional shopping center with 600,000 sq ft of commercial area under one roof, opened last week in Dallas.

Its 41 stores are connected by a T-shaped, air-conditioned mall, 50 ft wide. The top of the T is 415 ft wide; the center is 540 ft long.

This is the fourth such one-roof center to be erected. The others are in Denver, Minneapolis and Baltimore.

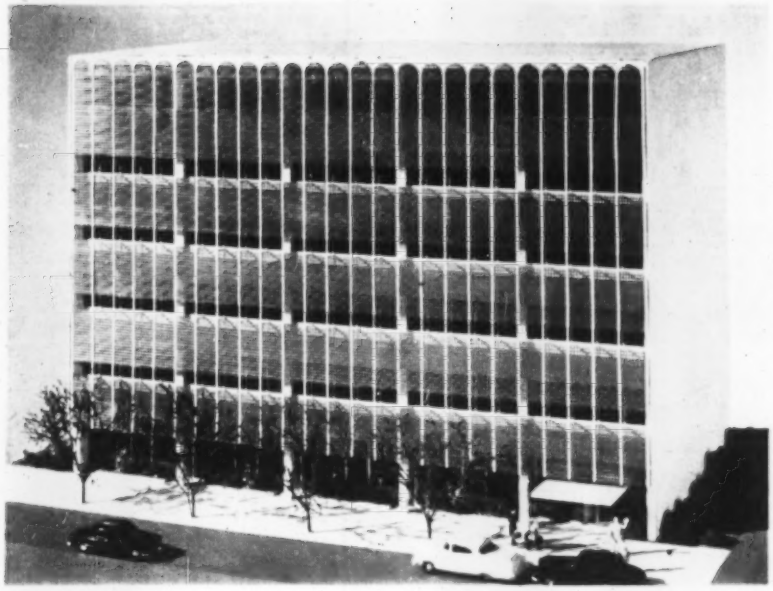
Big Town serves a trade area of some 250,000 people, and provides parking for 7,000 cars on its 77-acre site.

All shops are single story, except two major department stores—one with three levels, the other with two.

The building is of brick veneer and masonry construction with extensive use of glass. Construction time was 19 months. Additions are planned.

Total cost of the project is estimated at around $10 million.

Developer of the center was Gerri Von Frellick of Denver. Architects were Tatum and Quade, Dallas; T. C. Bateson Construction Co., Dallas, was general contractor.



Disguise for an Eyesore

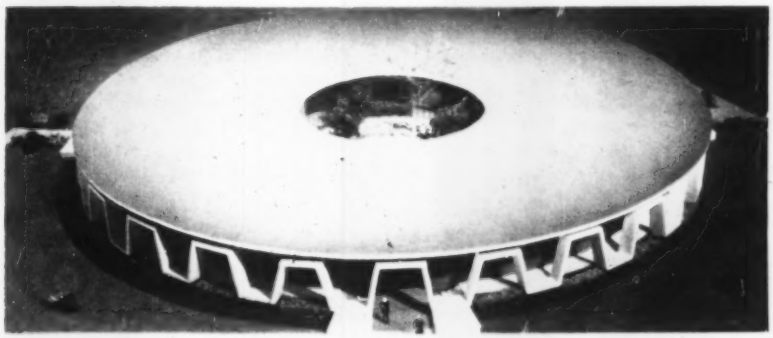
The bulky mechanical penthouse—a common eyesore on office buildings—is hidden from view in two new structures in the Los Angeles area.

The disguise is simple. The exterior treatments of the buildings are extended upward for an extra story.

In a 13-story addition to the Standard Federal Savings and Loan Co. building, the curtain wall is carried to the equivalent of slightly more than 14 stories on three sides; the fourth side continues its plaster wall.

The Independence Life Insurance Co. building, Pasadena, is a five-story structure that will appear as six. Extended upward are front and rear facade screens of gold-colored, anodized aluminum and two masonry walls.

Welton Becket and Associates of Los Angeles were the architects on the two buildings.



Doughnut for a Texas Campus

A doughnut-shaped administration building for Lamar State College of Technology, Beaumont, Tex., will eliminate any undesirable "rear view."

The structure will be 176 ft in diameter with a 56-ft-dia court in the center. Height from ground level to roof will be 16½ ft.

A series of concrete frets will surround the building. They will be made of precast concrete, finished in white with a backdrop of red brick. The frets will be 11½ ft high, tapering from 14 ft in width at the bottom to 9½ ft at the top. Each component will be 12 in. thick across the front and 3 ft 8 in. deep, front to back.

The building will be steel framed and will have a concrete foundation, first floor and roof. A fan-shaped addition can be added.

Pitts, Mebane and Phelps, Beaumont are the architects-engineers on the $400,000 project. General contractor is Thad Dedrick Construction Co., Houston. Construction will start this month.

California Aqueduct

Steam pumps may be used for 2,165-ft lift

Steam turbine-powered pumps may be used to help lift 3.5 million acre-ft of water annually over the Tehachapi Mountains for use in Southern California.

The pumps would be involved in a single, 2,165-ft lift.

This plan was revealed in the most recent report of the California Department of Water Resources, covering aqueduct routes down the San Joaquin Valley and into Southern California.

The report outlines a 5.5-million acre-ft San Joaquin Valley-Southern California aqueduct system. The system has a total length of 638 miles, including all its branches.

The report answers the much-debated question of whether to bring an aqueduct around, over or through the mountain ranges that separate Southern California from the rest of the state.

The spectacular pump lift would be in three stages. The first two would be powered by synchronous motors; for the third, direct-drive steam turbines are a distinct possibility.

Department of Water Resources engineers believe steam turbine drives have advantages over electric motors and warrant detailed further investigation.

Main advantage is greater efficiency as compared with electric motors using energy transmitted from conventional steam electric plants.

The aqueduct would produce 660 megawatts in power drops down the Southern California mountains.

In the Tehachapi Mountains, the aqueduct would split into western and eastern branches.

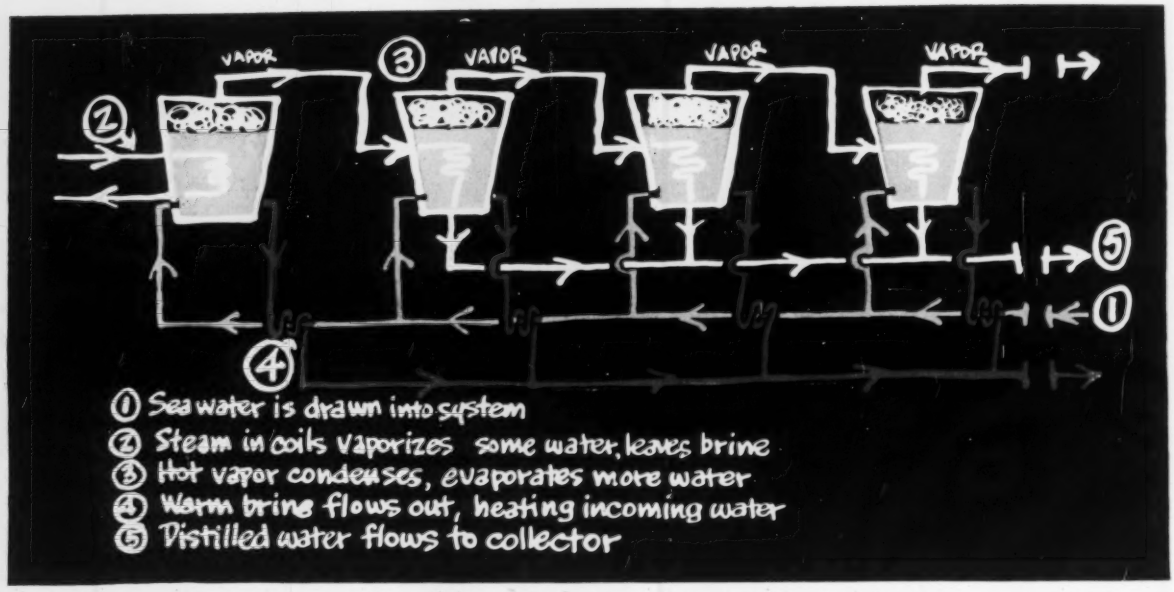
Terminal May Be Placed In Center of Airport

Plans to be submitted for a new terminal building at Vancouver International Airport, B. C., will show it at the center of the airport, between two parallel main runways. Parking areas also will be between the runways.

One runway is now in use. The other is on Vancouver Department of Transport drawing boards.

Current estimates indicate that the present terminal will be inadequate within three to five years.

Plans for the new terminal are being prepared by Vancouver consulting engineers Phillips, Barratt and Partners, and the British Columbia Research Council, which will submit a report on traffic and financial operation. The design calls for a rectangular main section with twin loading piers at right angles.


VAPOR
VAPOR
VAPOR
VAPOR
1 Sea water is drawn into system
2 Steam in coils vaporizes some water, leaves brine
3 Hot vapor condenses, evaporates more water
4 Warm brine flows out, heating incoming water
5 Distilled water flows to collector

This process will produce a million gallons of fresh water a day at new plant.

US Plans Big Sea-Water Distillery

Interior Department officials announced an important decision last week in the multimillion-dollar search for a cheap way to desalt water. They said the first of five government-financed plants for converting salt water to fresh will use a distillation process.

The plant will cost about $2 million and produce a million gallons of fresh water a day. Bids will be advertised early next year.

Processes for the other four plants will be announced at three-month intervals. Under legislation authorizing the five plants (ENR Sept. 11, 1958, p. 25) Interior's Office of Saline Water will finance construction of a sea-water conversion plant on each of the three coasts—Atlantic, Pacific and Gulf—and two inland plants for desalting brackish water. Each of the plants will use a different process. Total outlay by the government will be $10 million.

Conversion cost in the new plant is expected to run less than a dollar per thousand gallons. This is half the cost of the best operation at present but still three times what most American consumers pay for water.

The process is called long-tube vertical multiple-effect distillation.

Great virtue of the process lies in the multiple re-use of heat. Steam from a boiler supplies heat to evaporate sea water in the first vessel (see above). The hot, salt-free vapor is then piped through condensing coils submerged in a second vessel of sea water. The condensing vapor gives up heat to evaporate some of the water in the second vessel, then flows to a distilled water collector, and so on.

Multiple-stage distillation has been regarded for some time as the most promising method of desalting sea water (ENR March 21, 1957, p. 192). But scaling that clogs pipes and hampers heat transfer has been a major obstacle.

Now, however, pilot plant tests have "eliminated the formation of scale on the distillation equipment at much higher temperatures than heretofore possible," says Interior.

The long-tube vertical (LTV) process was borrowed from the salt and chemical industries, where it has been used for many years in such projects as water treatment. The late W. L. Badger, head of a Michigan engineering consultant group that did a study for the government, saw the possibilities of adapting the method to sea water conversion and ran the experiments that convinced the government the method is feasible.

The LTV process was tried out at a pilot plant at Harbor Island, N. C. It has been in operation since November, 1957, and "more severe operational tests" are continuing.

This plant uses one seven-tube LTV evaporator for simulating the variations of a large multiple-effect distillation cycle. The device has only one effect, but calculations show that 12 effects would be most efficient.

Salt crystals collected in the desalting process are purified by carbon filters and fed back through the heat plant as "slurry." Salt in new sea water flowing in is then picked up by these crystals instead of being deposited in the pipes.

What by-products from the new plant will be usable is still a question. At present there is no plan to use the brine, which is still highly diluted when ejected from the plant. But several companies have expressed possible interest in buying it for reduction to chemicals and minerals.

Whether electric power will be useful as a by-product depends somewhat on where the plant is located. The plant will produce about 3,000 kw a day, enough for a small community at a reasonable rate. But unless there is need for more power at the plant site, officials feel it will not be worth while on such a small scale. They emphasize that it is strictly extraneous to the demonstration plant.

Multiple-effect distillation of sea water has been in large-scale use at least since 1953. That year, a plant in Curacao, Dutch West Indies, started producing 600,000 gal a day. Both Curacao and Aruba, another Dutch West Indies island, have depended on distilled water for more than 20 years.

Variations of the same basic distillation process have been used on an even bigger scale since 1952 in the Persian Gulf sheikdom of Kuwait. The four existing installations can each produce about 1.2 million U. S. gallons a day.

Bids were taken in December on the fifth plant for Kuwait. It is planned to produce 2.4 million gallons daily.

What is probably the world's big-

gest distillation plant went into operation last June in the Dutch West Indies island of Aruba. Design output of the plant is 2.7 million gallons a day. When the Aruba distillery is working at this maximum rate, an oil-fired steam-electric plant operated in conjunction with it generates 12,500 kw of power—more than enough for the island's present and future needs.

Four other general types of desalting processes show considerable promise: solar evaporators, ion-exchange membranes, freezing and solvent extraction.

Solar evaporation is the simplest method, but it is obviously limited to areas of plentiful sunshine. In this process, salt water in basins covered by transparent glass or plastic is exposed to direct sunlight. The water vaporizes, then condenses on the underside of the covers. Suitable channels convey it to collectors.

Membrane methods look good for brackish water containing from 1,000 to 5,000 parts per million of dissolved salts. There are a number of working installations of this type.

The method depends on membranes that permit particular salt ions to pass through in one direction but not in the other. Ionic flow in the most widely used type is induced by an electric potential imposed on the solution. Membranes are arranged in stacks, with thin spaces or cells between for water. Membrane arrangement is such that when current is applied, ions flow both ways (depending on their polarity) from alternate cells, but cannot flow into these cells. This concentrates the salt ions in half the cells and leaves fresher water in the other cells.

Coalinga, Calif., the first U.S. city to have a municipal desalting plant, recently dedicated a 28,000-gallon-per-day membrane-process plant. Drinking water for the 6,500 population used to be brought 45 miles by railroad tank car. Now the town can make local well water potable. The plant removes over 400 lb of salt and minerals daily.

For each 1,000 gallons of fresh water, Coalinga officials expect to spend less than a dollar—15 cents for electricity and 40 to 80 cents for maintenance and replacement of membranes. Under the old system, freight charges averaged $7.05 per 1,000 gallons.

Both the freezing and solvent-extraction methods are being actively researched now. The freezing method depends on the formation of ice crystals in a salt solution and subsequent removal of entrained salts by repeated washing.

In the solvent-extraction method chemical solvents added to salt water absorb the water in solution, but not the salts. Water is then extracted from the solvent-water solution.

Plans for High Mountain Sheep area on Snake River indicate . . .

Proposal for New Dam Nears

New moves at state level by the Pacific Northwest Power Co. may indicate the company is ready to go after federal permission to build a High Mountain Sheep Dam on the Snake River along the Oregon-Idaho border.

The firm has amended its license application to the Oregon Hydroelectric Commission and it has revealed plans to the Oregon Water Resources Board for a fish by-pass canal around the dam.

The proposed 670-ft-high structure would be built at the same site recommended by the Corps of Engineers in a revised development plan for the Columbia Basin last December (ENR Dec. 11, 1958, p. 26 and Dec. 18, p. 23). It would be a mile above the Snake's confluence with the Salmon River, but below the confluence of the Imnaha.

The new moves may preview PNP actions before the Federal Power Commission in the near future. The company has had a preliminary application filed with FPC since early last year (ENR Apr. 10, 1958, p. 25).

The power company's steps are an effort to break through the stalemate over development of the Middle Snake.

Development of the river has become a subject of bitter dispute among the various public agencies concerned and is complicated by the public-vs-private-development dispute that has raged over the Hells Canyon section of the Snake for several years.

PNP's proposal to construct two low dams on the Snake at Low Mountain Sheep and Pleasant Valley—both above the confluence of the Imnaha—was turned down by FPC early last year (ENR Jan. 30, 1958, p. 24). The FPC at that time recommended a high dam at Nez Perce, which would double the power generation of the two lower dams and also provide flood control and other benefits.

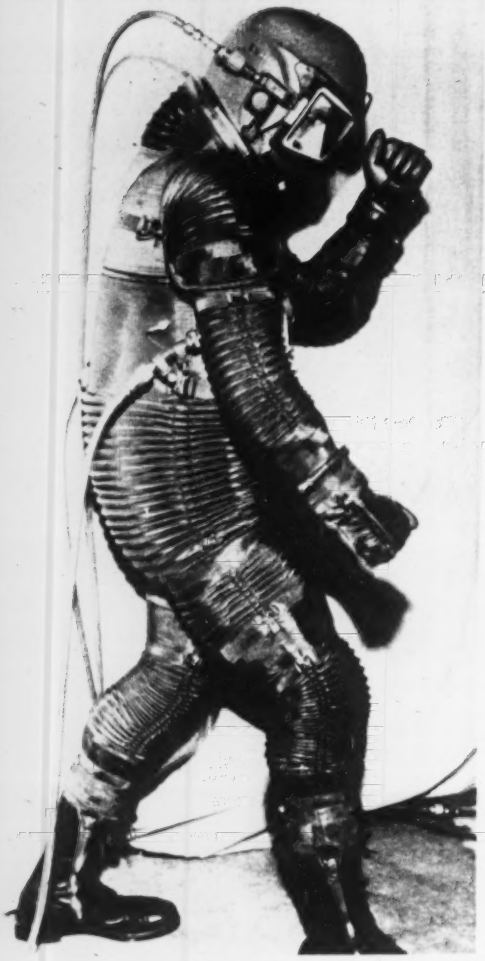
A dam at Nez Perce, however, has not found favor with conservationists. Nez Perce would be below the confluences of both the Salmon and the Imnaha rivers and would threaten the spawning grounds of 31% of the Salmon passing McNary Dam, downstream on the Columbia River.

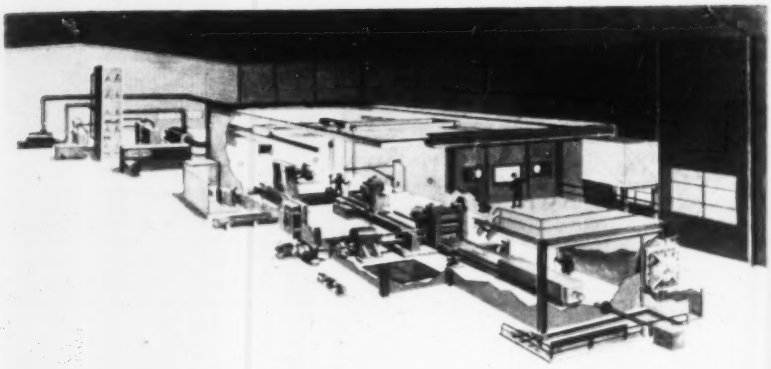
High Mountain Sheep Dam, above the Salmon's confluence, would affect only the Imnaha's fish, less than 3% of the salmon passing McNary.

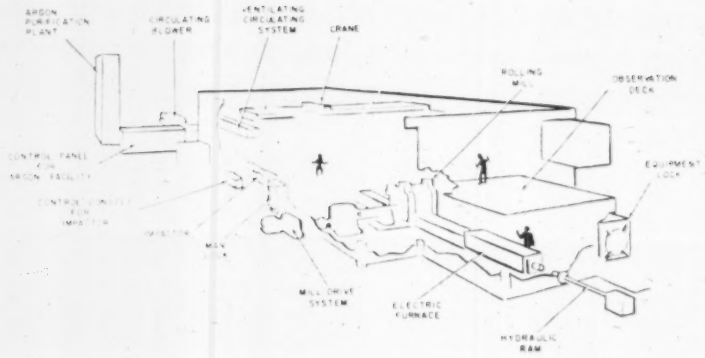
But the Interior Department now objects to any dam building on the Snake below the Imnaha until satisfactory fish passages can be built (ENR Nov. 6, 1958, p. 23). PNP's by-pass canal is aimed at overcoming the Interior Department's objection to a dam at the High Mountain Sheep site.

From the head of the nine-mile lake arm to be backed up in the Imnaha by the proposed dam, the canal would run to the dam's left buttress. Facilities would be provided to overcome the 600-ft elevation difference. Fish headed in either direction would be channeled into the canal.

Sometime this month PNP will probably make it clear to the Corps of Engineers Board of Rivers and Harbors that it is ready and willing to construct High Mountain Sheep. The firm would probably then complete its application to FPC.







Space-suited technicians . . . **will work in an airtight, argon-filled plant.**

Building a Fabricating Plant

How would you like to build a full-sized metal-fabricating plant that is completely airtight—a plant designed for technicians who will be working in "space suits?"

Sound like science fiction?

It's not. The first such plant is now under construction at Bridgeville, Pa. It will process exotic metals for space projects.

For the designers and builders, there are complex engineering and construction problems.

The In-Lab (inert atmosphere) plant will be filled with pure argon gas. Metals like molybdenum, tungsten and columbium which cannot be processed satisfactorily in ordinary earth atmosphere will be transformed into billets, bars, sheets and forgings within the protective argon atmosphere. They will be worked at temperatures between 3,000F and 4,000F.

The metals are intended for use in missiles, rocket and jet engines and space vehicles that must be able to withstand the re-entry temperatures encountered near the Earth. These highly refractory metals can withstand heat in excess of 2,000F.

The project is being built for the U. S. Navy Bureau of Aeronautics, Industrial Planning Division.

• How it's constructed—The fabricating plant is a 40x80-ft rectangular steel room, 22 ft high. It is contained inside another building, made of brick, that houses the argon atmosphere purification equipment.

The chief problem facing construction personnel is to construct the enclosure and install all equipment so that there will be no leakage of argon gas from the plant or of contaminating air into the plant.

The plant's shell, therefore, is made of 3/16-in. thick steel plates, welded to form roof, floor and walls. To prevent failure at corners, all corners are made with preformed angles. The walls, deck and ceiling are welded to these angles, thus eliminating corner welds.

The ceiling plates are supported by 4-in., I-shaped structural beams spaced 24 in. o.c.

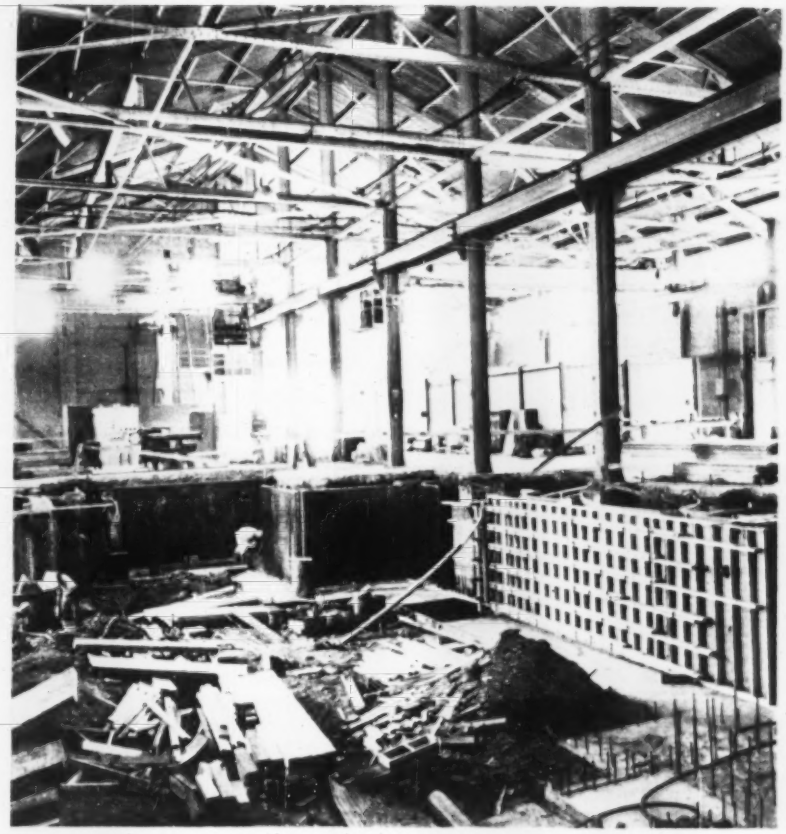
Although lighting fixtures are standard, couplings are welded to entries to insure positive sealing. All motors and mill drives within the facility have sealed bearings and are drip proof to prevent contamination of the atmosphere.

Installation of machinery inside the airtight steel room was complex. Before the steel plates of the floor could be welded, they were put into place over the foundation. Holes were drilled for the anchor bolts connecting the machinery to the foundation. The machinery was placed in position, leveled, lined up, and then removed for grouting. After the grouting, the equipment was relocated in position and the floor plates were welded to the anchor bolts to insure a tight seal.

Equipment includes a rolling mill, crane and horizontal impactor.

The building has three man locks, one equipment lock and one material lock.

All resemble the doors of pressurized high-altitude chambers—except that they are double-entry doors. They have



Constructors are licking complex problems in . . .

for Space Metals

a vacuum pump to remove the outside atmosphere, or argon.

The man locks have sliding doors, which are sealed into position with inflatable rubber gaskets.

Surrounding the facility are 22 portholes consisting of special glass, including welded glass shields. Both the rolling mill and the impactor also have large observation windows to permit remote control of all operations.

• **Working inside**—When the facility is completed, plant technicians wearing specially designed suits will go to work in the argon-filled room. Each man will carry his own oxygen, purification and recirculation equipment within a lightweight metal assembly attached to the back of his suit.

The suit has a helmet with a glass plate from ear to ear for total vision. It is flexible enough to permit a man to move freely and carry out relatively routine functions. The suits will be aluminized in order to shield the technicians from infrared and ultraviolet radiations.

Carbon dioxide and condensable vapors will be removed by chemical absorption equipment. A small electric blower mounted within the pack will circulate the cooled gas to permit body comfort.

Each man has a power cord that can be plugged into any number of wall units to operate the package conditioning and breathing system.

Cost of constructing the building is estimated at $3 million. Whether or not similar plants will be constructed in the future depends upon the success of this pilot plant. Completion is scheduled for late this year.

In-Lab is being built by Universal Cyclops Steel Corp. and the Navy at Universal Cyclops' Bridgeville, Pa., plant. The Howard P. Foley Co., Pittsburgh, is the prime subcontractor and is responsible for over-all erection. The Tampa Bay Engineering Co., St. Petersburg, Fla., is performing detail design work and consultation. Rust Engineering Co., Pittsburgh, performed the basic engineering of the facility and is now supplying architectural services.

Minuteman Bids

Bids sought on $800,000 station for latest ICBM

The Corps of Engineers, Los Angeles, has called for bids for construction of an $800,000 underground rocket-launching installation at Edwards Air Force Base, Calif.

The project includes two underground launching silos and support facilities. It will be part of the testing program for the Minuteman intercontinental ballistic missile.

The Minuteman ICBM, the Air Force's weapon of the near future, is a solid fuel rocket intended to be launched from underground housing. It is expected to be ready in 1963.

Development of an underground launching installation capable of withstanding the tremendous blast and heat generated by a fired ICBM is now considered to be the most critical phase of the Minuteman program.

The subsurface silos under construction for the liquid-fueled Titan ICBMs (ENR Feb. 19, p. 32) will be used primarily as bombproof shelters. The Titan must be raised to ground level for firing.

Tests have been made at Edwards AFB in the measured firing of small rockets from underground silos.

The two proposed silos will be used to fire larger rockets. More elaborate measuring instruments will be installed in the silo walls.

It is considered unlikely that any rocket as large as the operational Minuteman will be fired in the testing tubes. But the tests will give the Air Force Ballistic Missiles Division an idea of the conditions that will be encountered in the actual firing of a 60-ft Minuteman ICBM.

Because the Edwards AFB installation will be experimental, only the launching silos will be underground.

In addition to the two silos, the work to be performed will include an assembly building, a shop building, water lines, a sewage disposal system, an electrical distribution system, warning and communications systems and paved sidewalks and operations areas.

Bids are to be opened March 19. Work on the project is to begin within five days following the award. The first silo must be completed within 95 calendar days and the second within 125 days.

• **Titan bid postponed**—Opening of bids for construction of an underground ballistic missile training installation at Vandenberg Air Force Base, Calif., will be delayed one month, until April 4.

MACKS...for every

MACK MODEL LRX 15-TON DUMPER

Extra trips per shift are won by Mack Model LRX's jack-rabbit agility in starting, turning and backing with capacity loads aboard. Built to shrug off the relentless pounding of big-yardage shovels, LRX is a hustler over the flat or up steep grades. LRX is loaded with features for top performance and economy: Mack or Cummins diesel engines up to 220 hp . . . powerful air brakes for steep descents . . . Mack ten-speed transmission . . . Planidrive rear-axle assembly.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 15 tons.

DIESEL ENGINES: 170 hp, naturally-aspirated Mack Thermodyne; 220 hp, naturally-aspirated Cummins; 205 hp, turbocharged Mack Thermodyne.

TRANSMISSION: Mack, selective, constant-mesh, 10 speeds forward, 2 reverse.

CLUTCHES: Mack single-plate, 253 sq. in. engagement (for 170 hp Mack Thermodyne); Mack two-plate, 416 sq. in. engagement (for other sizes).

FRONT AXLE: Mack, heavy-duty, drop-forged I-beam.

REAR AXLE: Mack Planidrive, with final reduction through planetary gear train within wheel hubs.

BRAKES: Full air, with 7¼ cu. ft. compressor.

FRAME: Wide flange, rolled section I-beam.

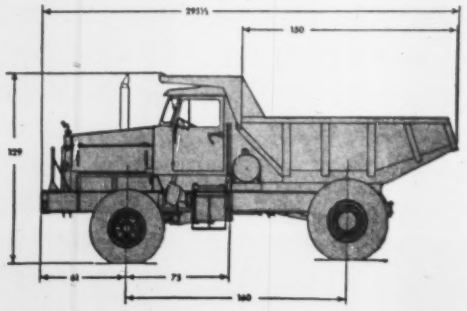
SPRINGS: Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

TIRES: Standard: Front, 12.00-24 (16P) rib; rear, 14.00-24 (18P) lug. Optional: Front, 13.00-24 (18P) rib; rear, 16.00-25 (20P) lug.

WHEELS: Cast, spoked.

STEERING: 60′ turning circle diameter.

DUMP HOIST: Twin, double-acting, 8″ cylinders providing 70° dumping angle.



MACK MODEL LVX 22½-TON DUMPER

Built to pit power and strength against slam-bang job sites, Mack LVX sticks to the job for years of sustained, like-new performance. Rugged power-train offers a 300 or 335 hp diesel engine, Mack overgeared transmission (with two-speed compound or torque converter), and Mack Planidrive rear axle. For smooth, swift maneuverability it's in a class by itself—thanks to ideal power steering system, air-assisted clutch, and offset cab for maximum visibility front and rear.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 22½ tons.

DIESEL ENGINES: 320 hp, supercharged Cummins; 335 hp turbocharged Cummins.

TRANSMISSIONS: Mack, selective, constant mesh, 8 speeds forward, 2 reverse; converter and Mack 4-speed transmission; Torqmatic converter and transmission.

CLUTCH: Mack two-plate, air-assist with manual actuation.

FRONT AXLE: Mack, heavy-duty, drop-forged I-beam.

REAR AXLE: Mack Planidrive, with final reduction through planetary gears within wheel hubs.

BRAKES: Full air, with 12 cu. ft. compressor.

FRAME: Alloy-steel, wide flange I-beam.

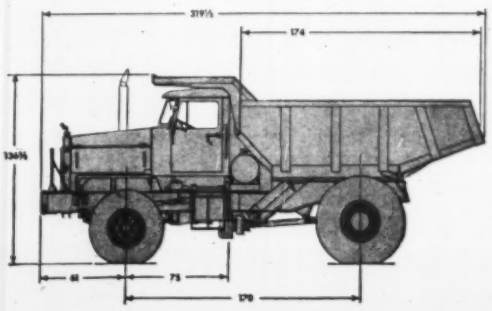
SPRINGS: Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

TIRES: Front, 14.00-24 (16P) rib or 14.00-24 (20P) rib; rear, 18.00-25 (24P) lug.

WHEELS: Cast, spoked.

STEERING: Hydraulic power-steering, 62′ turning circle diameter.

DUMP HOIST: Twin, double-acting, outboard-mounted, three-section telescopic cylinder assembly, providing 70° dumping angle.



EXCAVATING. . .FILLING. . .EQUIPMENT HAULING. . .AGGREGATE AND

construction job...rugged or routine

MACK B-80 SERIES TRUCKS and TRACTORS

Here's Mack profit-power personified! There are B-80 tractors for heavy-duty hauling of platform or dump trailers . . . B-80 truck chassis for dumper, mixer or utility service. B-80's are powered with 170 to 232 hp Mack gasoline or diesel engines, or with Cummins diesels from 220 to 320 hp. Choice of Mack transmissions up to 20-speed Quadruplex. Powerful, rugged braking power. Available in four- or six-wheel models including six-wheel-drive units. Option of power steering.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 7 to 13 cubic yards or as mixers, 7½ to 8½ cubic yards (larger dumpers or mixers may require special provision).

ENGINES: Gasoline: Mack Thermodyne, 232 hp. Diesel: Mack Thermodyne, 170 hp; 205 hp, with turbocharger. Cummins, 220 hp; 320 hp with supercharger.

TRANSMISSIONS: Mack: Five-speed, direct or overgeared. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Availability contingent upon chassis models.

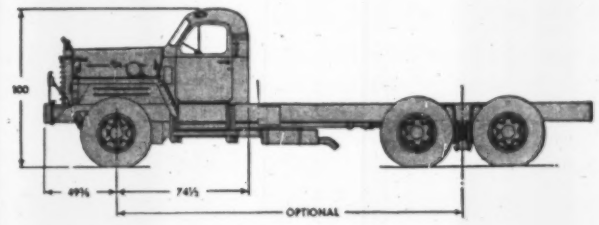
FRONT AXLE: Mack, heavy-duty, drop-forged I-beam. Mack, front-wheel-drive, for 6x6 chassis.

REAR AXLES: Four-wheelers: Mack Dual Reduction, with radius rods and torque arms. Six-wheelers: Mack Balanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider.

FRAME: Channel: Alloy-steel, heat-treated; channel reinforcement, standard.

TIRES: Available sizes and types: 11.00-24, 12.00-24 (Four-wheeler); 11.00-22, 11.00-24, 12.00-24 (Six-wheeler). Size availability contingent upon bogie.

STEERING: Hydraulic power-steering (optional extra).



Only MACKS offer all these profit-power features

Quality that can't be measured by specifications. "Specs" only tell half the Mack story. Mack on-the-job records tell the rest. For over half a century, Macks have out-earned, outworked and outlasted any other make of truck on demanding jobs. That's because every Mack starts with the most advanced design and the most durable materials . . . is built to the highest standards of strength and precision . . . is tested through every stage of construction.

Trucks and tractors for every construction job. As dumpers, mixers, tractors or platform trucks, dependable, economical Macks are engineered *right* for every important construction task.

Widest choice of engines. Mack offers a complete range of proved truck engines: Mack gasoline engines at 150 hp . . . Mack Thermodyne® diesel, Mack gasoline or stock diesel engines from 170 to 450 hp.

Super-capacity and all-wheel-drive models. For capacities up to 40 tons where maximum flotation is required, a full line of tandem rear-axle Macks is available. For utmost traction, Mack front-wheel-drive assemblies offer you four wheelers with four-wheel drive and six wheelers with six-wheel drive—models that can move heavy loads over any surface that will support a truck.

Parts and service wherever you operate. Mack owners everywhere have complete parts-and-service coverage. Your nearby Mack branch or distributor carries *nearly* any part you'll need on the job . . . and behind them are Mack parts depots that can ship out *any* replacement part at a moment's notice.

For capacities of 30 tons or more where maximum flotation is required, a full line of tandem rear axle Macks is available.

MATERIALS HAULING . . .CONCRETE, DRY-MIX AND ASPHALT HAULING

MACKS...stock or custom

MACK B-60 SERIES TRUCKS and TRACTORS

As dumpers, mixers, tractors and platform trucks, Mack B-60's have hung up records for economy on every kind of job. The "workhorse of the industry," they're powered with Mack Thermodyne gasoline or diesel engines from 170 to 205 hp. Four- and six-wheelers. Six-wheel models feature the exclusive Mack Balanced Bogie with Power Divider for non-spin traction through mud, loose gravel or sand. Longest mileage life in its class.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 6 to 12 cubic yards or as mixers, 5½ to 7½ cubic yards (with options).

ENGINES: Gasoline: Mack Thermodyne, 185 hp. Diesel: Mack Thermodyne, 170 hp; 205 hp with turbocharger.

TRANSMISSIONS: Mack: Five-speed, direct. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Ten- and twenty-speeds both on- and off-highway types. Availability contingent upon chassis models.

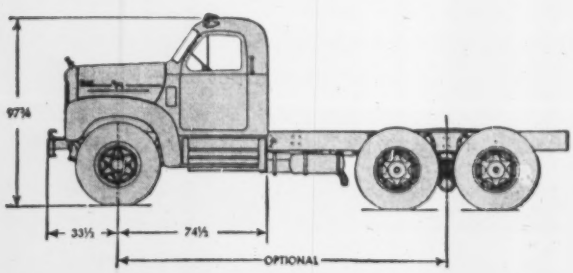
FRONT AXLES: Mack, heavy-duty, drop-forged I-beam. Three available sizes.

REAR AXLES: Four-wheelers: Mack Dual Reduction—with radius rods and torque arms. Six-wheelers: Mack Balanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider. Three bogie sizes available.

FRAME: Channel: Alloy-steel, heat-treated, pressed; channel reinforcements for maximum services (standard or optional extra).

TIRES: Available sizes and types: 11.00-24, 12.00-24 (Four-wheeler). 10.00-20, 10.00-22, 11.00-20, 11.00-22, 11.00-24 (Six-wheeler). Size availability contingent upon bogies required.

STEERING: Hydraulic-power type (optional extra).



MACK B-40 SERIES TRUCKS and TRACTORS

With big-truck capacity and stamina . . . with small-truck agility and economy . . . Mack B-40's are always in demand as dumpers, tractors, mixers and platform trucks. Mack Magnadyne gasoline engines develop 150 hp at low, life-prolonging engine speeds. Mack transmissions up to 20-speed "Quads." Four-wheel models and six-wheelers with Balanced Bogie with Power Divider. All-wheel-drive models, as well. Like all Macks, B-40's are engineered, built and tested with one objective: sure-fire performance on rugged jobs over long periods of time.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 5 to 10 cubic yards or as mixers, 5½ to 6 cubic yards (with options).

ENGINE: Gasoline: Mack Magnadyne, 150 hp.

TRANSMISSIONS: Mack: Five-speed, direct. Ten-speed two-lever Duplex. Twenty-speed Quadruplex. Ten- and twenty-speed, both on- and off-highway types. Availability contingent upon chassis models.

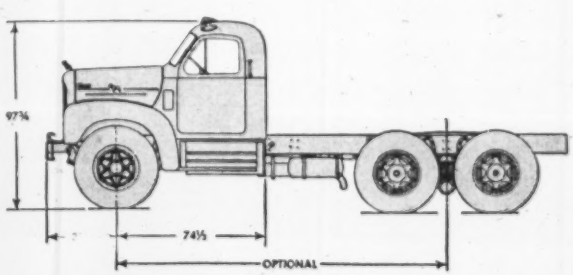
FRONT AXLES: Mack, heavy-duty, drop-forged I-beam. Four sizes. Mack, front-wheel drive (for 6x6 chassis).

REAR AXLES: Four-wheelers: Mack Dual Reduction. Six-wheeler Bogie: Mack Balanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider.

FRAME: Channel: Alloy-steel, heat-treated, pressed; appropriate inside-channel reinforcement (standard or optional extra).

TIRES: Available sizes and types: 10.00-20, 11.00-20, 11.00-22 (Four-wheeler). 8.25-20, 9.00-20, 10.00-20, 10.00-22, 11.00-20 (Six-wheeler). Availability contingent upon chassis.

STEERING: Hydraulic power-steering (optional extra).



EXCAVATING. . .FILLING. . .EQUIPMENT HAULING. . .AGGREGATE AND

built...for your specific job

Here's how MACK custom assembles the truck to fit your job

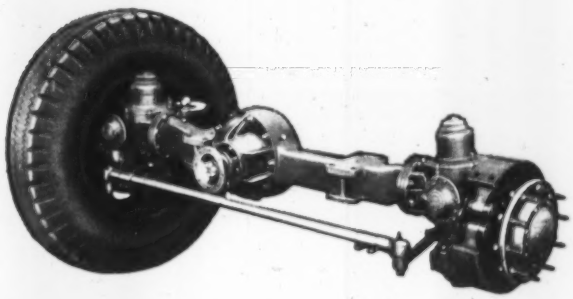
Mack builds every major component in a wide range of capacities ranging through super-duty. So—

Whatever kind of operation you have . . . whatever loads you haul . . . whatever problems you face by way of terrain, climate or grades . . . we can select the interchangeable, Mack-built components that meet these conditions and custom assemble them into the most efficient truck you can buy. (Stock models available too, of course.)

And only Mack offers quality features like these—

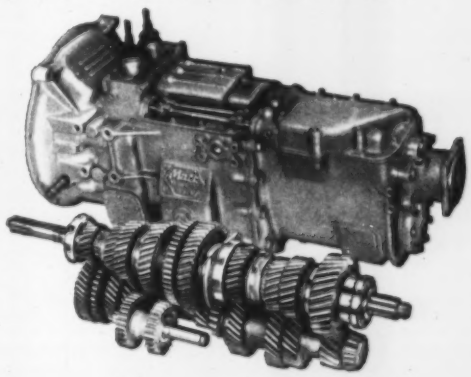
THE STRENGTH OF MACK-BUILT FRONT AXLES

Mack's drop-forged I-beam front axles are made super strong for long, trouble-free service. Extensive use of heat-treated steels for crucial parts means minimum maintenance. And Mack's exclusive *front-drive axle* for all-wheel-drive trucks offer the greatest ground clearance and strength of any made—with all parts fully enclosed.



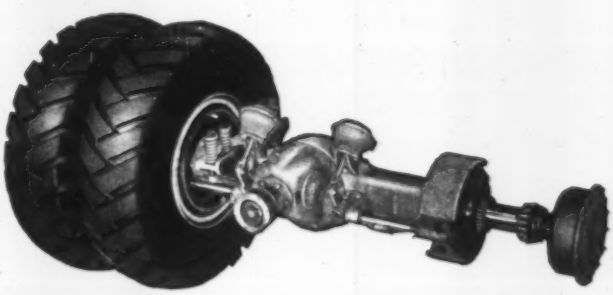
THE LONG LIFE OF MACK-BUILT TRANSMISSIONS

Service records prove that Mack transmissions—like this 20-speed Quadruplex—stand up to heavy-duty hauling far longer and need less attention than any others—thanks to the use of the finest gear metals known . . . to painstaking precision manufacture . . . and to exclusive Tetrapoid gear design that gives maximum strength, longer life and smoother action. Five- to twenty-speed units, each with ideal ratio steps.



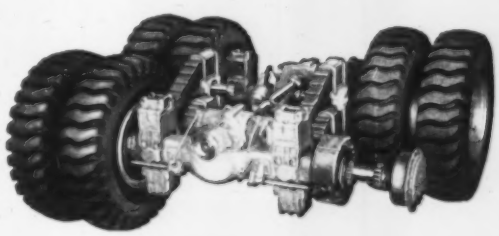
THE DURABILITY OF MACK-BUILT 2-WHEEL REAR AXLES

Mack's two-wheel, rear-axle assemblies have an unmatched reputation for service under strenuous conditions. Dual Reduction, gear-type differential and Mack's famous planetary gear reduction at the wheel hubs (Planidrive) provide the smooth distribution of power vital to top truck performance.



THE TRACTION OF MACK-BUILT BALANCED BOGIES

Macks perform where other trucks bog down—in mud, loose gravel or sand—thanks to Mack's exclusive Balanced Bogie with Power Divider. It's a 4-wheel-drive, tandem rear-axle assembly with an inter-axle differential that directs the most power to the wheels having greater traction. Planidrive final reduction in all four hubs eliminates the need for bulky carriers, differentials or axle shafts. Clearance is increased, weight is reduced, maintenance is fast and simple.



MACK *first name for* TRUCKS

Mack Trucks, Inc., Plainfield, New Jersey • In Canada: Mack Trucks of Canada, Ltd.

MATERIALS HAULING. . .CONCRETE, DRY-MIX AND ASPHALT HAULING

What's Left of U.S. Road Money?

Here's a State-by-State Rundown . . .

State	Interstate System: Fiscal Year	Interstate System: Percent Obligated	Interstate System: Unobligated Balance	ABC Roads: Fiscal Year	ABC Roads: Percent Obligated	ABC Roads: Unobligated Balance
			(Thousands of Dollars)			
Ohio	1960	96	$ 6,412	1959	92	$38,599
Calif.	1960	37	158,854	1959	77	60,235
Fla.	1960	28	46,229	1959	90	16,170
N. Y.	1960	16	103,409	1959	71	73,203
La.	1960	10	58,907	1959	61	19,562
Wash.	1960	8	41,437	1959	57	20,726
N. M.	1960	7	27,668	1960	5	10,973
N. H.	1960	4	13,152	1959	65	5,395
Ill.	1960	3	123,367	1959	81	46,984
Mo.	1959	99	71,622	1959	47	37,489
Mich.	1959	97	100,115	1959	16	55,986
Tenn.	1959	94	76,677	1959	60	25,902
Wyo.	1959	93	27,363	1959	85	9,999
Md.	1959	91	58,319	1959	22	17,260
Ore.	1959	90	45,963	1960	11	11,925
R. I.	1959	86	13,450	1959	23	8,663
Penn.	1959	78	126,732	1959	72	54,877
Ky.	1959	77	53,319	1959	87	18,053
Mass.	1959	77	80,183	1959	66	22,115
Okla.	1959	75	32,540	1959	78	20,881
S. C.	1959	63	31,255	1959	20	20,227
Colo.	1959	60	31,113	1959	44	21,616
Tex.	1959	60	162,876	1959	92	58,185
Iowa	1959	59	41,916	1960	45	10,507
Va.	1959	57	124,170	1959	64	23,226
Kan.	1959	50	42,183	1959	83	20,925
W. Va.	1959	50	44,029	1958	78	21,236
Utah	1959	42	35,694	1959	66	11,374
Me.	1959	41	23,179	1959	47	10,112
Conn.	1959	40	42,989	1958	74	18,534
Minn.	1959	38	77,364	1960	33	14,204
Ariz.	1959	33	50,932	1960	22	8,543
Miss.	1959	31	51,321	1959	58	20,092
N. J.	1959	30	114,137	1958	77	37,550
N. D.	1959	30	27,915	1959	81	11,877
Dist. of Col.	1959	27	34,625	1957	96	15,673
Ala.	1959	24	83,190	1959	89	19,959
Ark.	1959	14	51,918	1959	25	22,714
Ga.	1959	12	104,567	1959	64	27,690
Wis.	1959	6	72,937	1960	8	18,692
Ind.	1959	5	122,254	1959	4	41,418
Vt.	1959	1	37,071	1959	91	4,049
Nev.	1958	94	36,948	1959	47	13,011
N. C.	1958	90	73,401	1959	21	38,235
Del.	1958	73	25,344	1959	71	4,894
Mont.	1958	73	66,205	1959	59	19,840
Neb.	1958	72	53,400	1959	64	19,988
S. D.	1958	65	42,979	1959	39	17,456
Ida.	1958	59	46,516	1959	56	12,545
Alaska	....	..	.....	1959	36	22,388
Hawaii	....	..	.....	1958	98	8,187
P. R.	....	..	.....	1958	46	15,605
Total			$3,018,146			$1,205,669

While Congress tries to figure out how to beef up the Highway Trust Fund, states are cracking along at a fast construction pace—using up the trust fund money.

Ohio, for example, had already obligated 96% of its 1960 Interstate apportionment as of January 1, 1959. In all, some nine states have started using 1960 money.

States to date have used an average of 76% of their fiscal 1959 Interstate money.

The ABC—primary, secondary and urban—construction program is moving at about the same pace. Six states are using 1960 money now; 27 have obligated from 50 to 100% of their 1959 money. Hawaii, West Virginia, New Jersey, Connecticut and Puerto Rico are still using 1958 money. The District of Columbia is still using fiscal 1957 ABC money. Overall, however, states have obligated an average of 64% of the ABC federal-aid money.

The figures show which states would be hurting first without 1961 money in hand. They also show the states where the most federal money remains available for road construction. This, of course, is no indication that state-matching funds are available. Matching funds are needed to commit the federal money to construction.

Totals now left in the trust fund are found by adding the unobligated balances: $3.02 billion for Interstate and $1.21 billion for ABC roads.

Wyoming May Elect Its Highway Commissioners

Wyoming's State Senate is considering a bill that would replace the present seven-member, appointive State Highway Commission with 23 elected commissioners.

The proposed commission would be composed of one member elected from each county on a nonpartisan ballot.

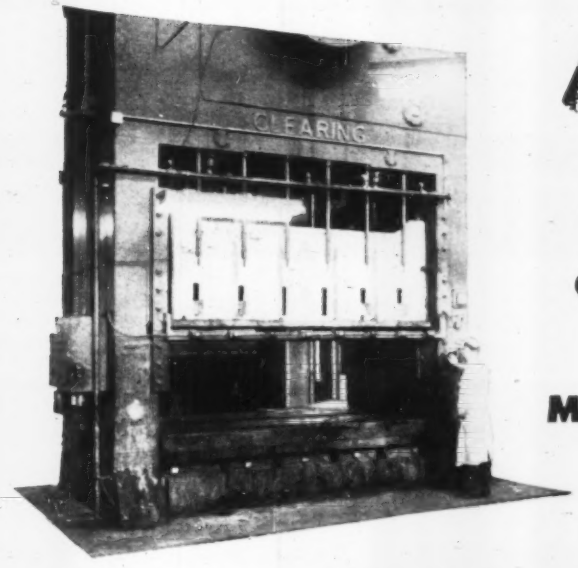
Sponsors of the bill claim an enlarged, elected commission would be a "means of getting the highway commission more directly responsible to the people."

If passed, the highway commission reorganization plan would go into effect March 1. Gov. Joe Hickey would appoint the original 23 members. No more than 12 would be from the same political party.

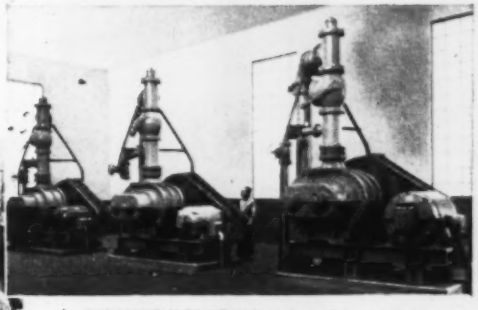
Elected commissioners serve terms of four years. But half those elected in 1960 would serve for only two years. The present commissioners are appointed for six-year terms and cannot be reappointed.

RESILIENT MOUNTING

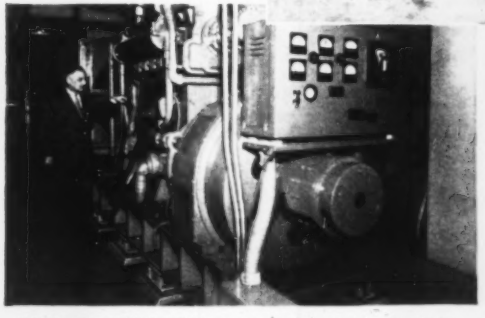
CUTS FOUNDATION COSTS IN HEAVY MACHINERY INSTALLATIONS



RESILIENT MOUNTING of this 400-ton capacity Clearing press at the RCA-Whirlpool-Seeger Plant in St. Paul, Minn., directly on Korfund Vibro-Isolators effected dramatic savings in eliminating special foundations and reinforcement. Isolators protect the structure, nearby equipment, personnel, and the press itself from shock and vibration. View at right shows mounts being installed below floor level. →



RESILIENT MOUNTING of these 3 Sutorbilt Blowers at the City of San Jose, California, Sewage Treatment Plant on Korfund Vibro-Isolators cut foundation costs and provided trouble-free, complaint-free operation, even though the plant is located in a residential area.



RESILIENT MOUNTING of this 300-hp Fairbanks-Morse Diesel-Electric Generator at General Telephone Co. of Los Angeles on Korfund LK/E Vibro-Isolators completely eliminated the need for a foundation, yet protects delicate switching and electronic apparatus from malfunction and damage due to vibration.

RESILIENT MOUNTING, soft, but elastic, is safe and practical. Korfund steel spring mounts prevent transmission of vibratory forces and change harmful sudden shock loads to harmless gradually applied forces. Foundation costs are cut! It is no longer necessary to add the usual 100%, or higher, safety factor for dynamic forces—required with rigid mounting methods—when figuring structural and soil loads, if Korfund resilient mountings are used. Korfund Vibro-Isolators absorb these dynamic forces and protect the structure and the machine itself from damage due to vibration and shock.

Next time you run into a problem of this kind, it will pay you to get in touch with Korfund first. Many case histories with complete specifications are available. Chances are, Korfund engineers have solved a problem just like yours in the past. Meanwhile, write today for your copy of Bulletin 3 9 which gives full details.

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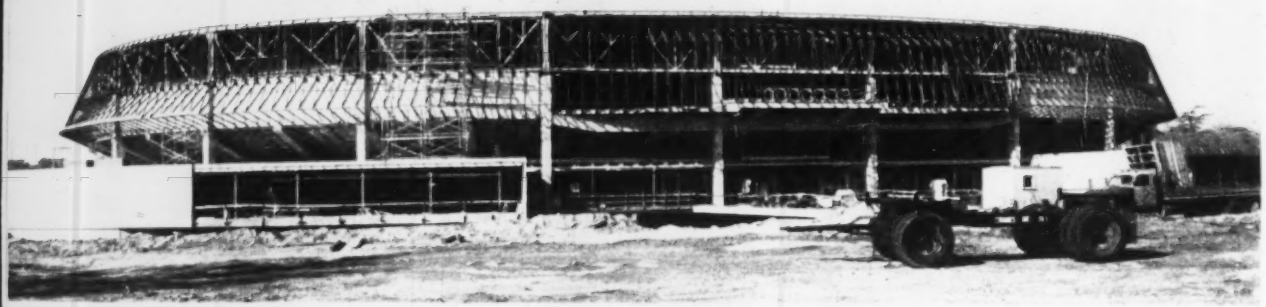
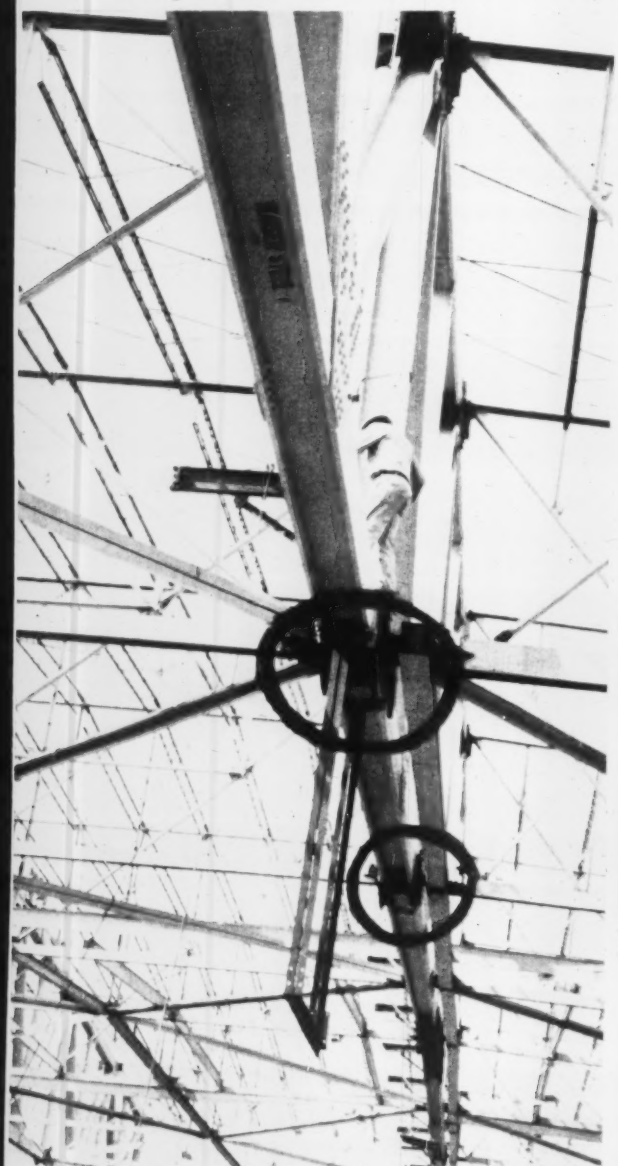
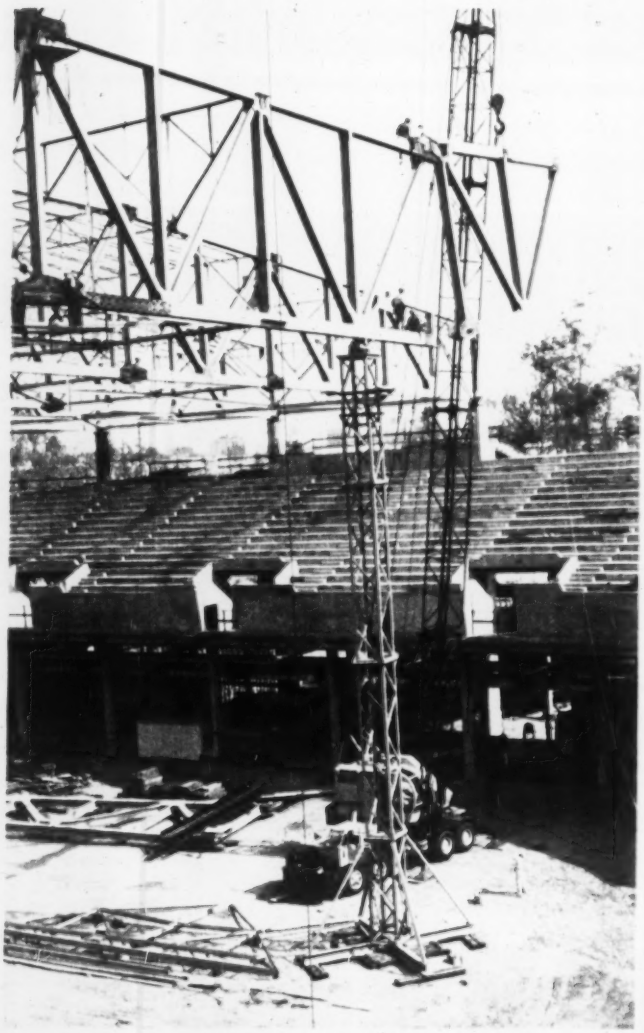


New Los Angeles Memorial Sports Arena, now under construction . . .

Steel Trusses Span



SLIDING CONNECTIONS and parallel beams accommodate expansion in plane of lower truss chord.



STEEL SHORING TOWERS support long-span trusses as they are erected in sections by floor-level truck cranes.

. . . Will look like this when completed in May or June.

315 Feet in LA's New Arena

The elliptical shape and relatively flat roof of the new Los Angeles Memorial Sports Arena provides maximum seating within minimum cubic footage.

The shape required steel 315 ft long—the longest such building trusses in the country, according to Kaiser Steel Corp., the steel erector.

Intended primarily for sporting events, the Arena has a maximum seating capacity of 22,400. It will also house trade shows and conventions, including the 1960 Democratic Convention.

It will be ready this May or June, about three months ahead of schedule.

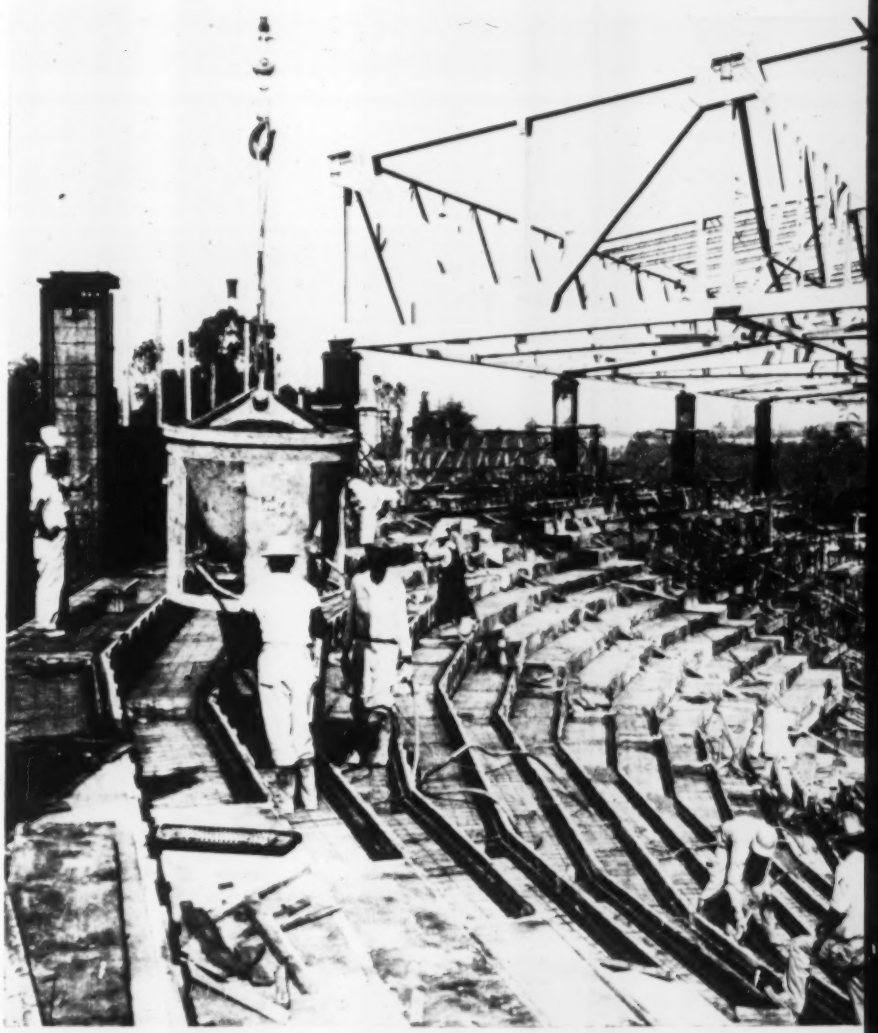
The structure is being built for the Los Angeles Memorial Coliseum Commission, a city-county-state agency that also operates the 105,000 seat stadium nearby. The $5.8-million construction program is being financed by revenue bonds.

Design is by Welton Becket & Associates, architects and engineers, with structural design by Brandow & Johnston, structural engineers. The main construction contract, amounting to $5.2 million, is held by L. E. Dixon Co. of San Gabriel, Calif.

• **Largest building trusses**—The building is 315 ft wide and 430 ft long. There are eight transverse trusses spaced on 50-ft centers, four of these trusses being 315 ft long.

The four long trusses are mounted on 30-in., 172-lb WF columns. Truss depth is 13 ft, 8 in. at the columns and 23 ft, 8 in. at center span, with bottom chord rising 7 ft from column to center span. Floor to truss clearance at center span is 75 ft.

The Los Angeles Sports Arena can be compared with the San Francisco



CONCRETE FOR SEATING is placed during steel erection. Steel forms are shored by pipe falsework. There are 12,000 permanent seats on arena level.

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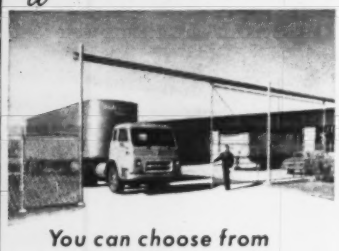

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—8 Fence Heights
—4 Fabric Metals
—2 Types Metal Posts
—Top Rail or Top Wire
—Single or Double Extension Arms
—6 Gate Styles, Many Widths

• PAGE provides a wider choice of long lasting fence fabric metals. Each has characteristics which meet individual preferences or make it more suitable to meet certain climatic or service conditions.

Galvanized Steel • Woven of time-proved open-hearth steel wire, hot-dipped galvanized after weaving to assure long service.

Aluminized Steel • By a PAGE patented process a coating of commercially pure aluminum is bonded to steel wire to provide longer corrosion resistance, yet its cost is comparable with fence fabric having shorter life expectancy.

Aluminum • Another metal in non-corrosive class. It will not rust, will not discolor materially under unfavorable conditions. Semi-flat weaving gives it exceptional strength.

Stainless Steel • This chrome-nickel fabric is immune to practically all corrosive elements. Advantageous near salt water and where air is laden with smoke, sulphur and other factory emissions.

Nation-wide Erecting Service • In more than 100 districts there are local, responsible members of Page Fence Association—the largest fence engineering, erecting and servicing organization. These experts own their own plants and equipment, carry complete stocks of PAGE FENCE materials, and operate crews of trained workmen. Each firm is permanently located and has lasting interest in every job it handles.

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. . . Expansion in long spans pose design problem

Cow Palace, which housed the 1956 Republican National Convention. The 300-ft-wide Cow Palace roof has curved cantilever trusses springing from concrete buttresses and supporting flat three hinged arches. Cow Palace trusses are spaced 37½ ft on centers, and clearance from floor to roof is more than 95 ft. The Cow Palace has some 10,000 permanent installed seats, compared with 12,000 for the Los Angeles arena. Clear area inside the permanent seating is 142 x 237 ft for the Cow Palace and 150 x 234 ft for the Arena.

The 315-ft-long trusses have eight 31½ ft panels and two 30½-ft panels. Top and bottom chords are 14-in. WF members with maximum section weighing 314 lb per ft. A single truss weighs about 140 tons. In addition to four 315-ft-long trusses, there are two 286-ft trusses and two 229-ft, 2-in. trusses.

Heavy truck cranes erected the trusses in sections. High steel shoring towers provided temporary erection support. The trusses are shop-riveted and field-bolted.

A major design problem is providing for temperature expansion in the long trusses and the long building. Each of the eight trusses are fixed at the west end. At the east end, however, sliding bearing plate details permit movement in the east-west direction, but prevent north-south movement.

To accommodate expansion in the longitudinal direction, the lower chord of the two outside 315-ft trusses is paralleled for part of the span by steel beams. These are joined to the main trusses by sliding plate connections that permit transfer of vertical loading but allow movement at right angles to the truss line.

Horizontal bracing trusses in the plane of the main truss lower chords are connected to these part-span beams on one side. The vertical longitudinal bracing trusses are fixed to the main trusses at the top chord and to the horizontal-bracing trusses at the bottom. This permits the building to breathe in the plane of the lower chord and still preserves the integrity of the roof.

Bracing trusses are spaced on 31- or 32-ft centers. They support open-web steel joists. Roof is an acoustic-type decking covered with composition roofing. Steel is left exposed in the center part of the arena.

• **Seating arrangement**—The 12,200 permanent seats are arranged in 28 rows using cast-in-place concrete treads and risers. Treads are 32 in. wide and risers 15 in. high, with concrete-thickness on the treads 2½ in. and on the risers, 5½ in. Riser concrete serves as beams spanning between inclined girders.

This concrete was cast using steel-pipe shoring and steel-pan bottom forms. Concreting and steel erection proceeded simultaneously, except that the bottom rows of the permanent seating were not constructed until all steel was in place. This was necessary to give steel-erection cranes room to operate.

All permanent seating (theater-type chairs) is reached from ground-level approaches. The arena floor level is some 24 ft below ground level. A 35-ft-wide circumferential concourse distributes foot traffic to the permanent seating. The entrances are arranged for minimum jamming of departing crowds.

In addition to the 28 rows of permanent seating, 12 rows of temporary seating can be installed on the arena level. This seating is reached by four separate entrances. Thus, maximum seating capacity for ice hockey is 16,000. And the arena was sized to permit a 200 x 85-ft ice rink completely surrounded by inclined seating. For basketball, which requires a smaller floor area, the arena will house more than 18,000. Maximum possible is 22,400.

The upper level includes, in addition to the seating and concourse, offices, concession areas and lavatory facilities. The lower level houses mechanical space, storage rooms, concession areas, lavatory facilities and locker and shower rooms. The lower level has a truck entrance big enough (40 ft wide and 20 ft high) to bring huge displays directly to the arena floor.

Arena-level access includes two 48-in.-wide moving stairs—one at each end. These run down when patrons are entering and up when they're leaving.

A modern press booth is provided on the east side of the arena and radio and television facilities on the west side. Television camera locations are permanently installed around the arena.

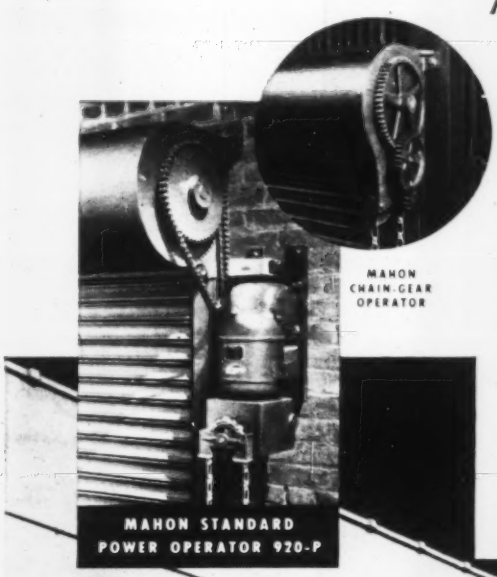
A central vacuum system pulling 7 in. of mercury is being installed throughout the seating area. It will enable 10 men to clean the permanent seating area in three hours.

• **The building will be cool**—A complete air-conditioning system totaling 1,100 tons is provided. Maximum air-conditioning load will occur at night boxing matches with crowds up to 20,000. At other events loads will be less than the maximum.

The air-conditioning plant includes four packaged water-chilling units, two of which are able to chill either brine or water. And the air-distribution system is designed to service the arena floor, concourse and seating area independently. Business offices on the concourse level are also treated as separate air-conditioning zones.

Rolling Steel Doors

Manually, Mechanically, or Electrically Operated



Whether it be a truck opening, shipping dock opening, railroad opening or crane opening, in new construction or in an old building, rolling steel doors offer very definite timesaving and space saving advantages . . . the fast, vertical roll-up action of the door curtain requires no usable space either inside or outside of the opening—and there are no overhead tracks or other obstructions to restrict headroom and interfere with material handling or stacking adjacent to the opening. In addition, the all-metal construction of Mahon Rolling Steel Doors give you the permanence of Bonderite protected steel . . . maintenance is minimal, and, in steel, you also get maximum protection against intrusion and fire. No other type of door can provide all of these important features which are so necessary for functional efficiency in door openings today. When you select a rolling steel door, check specifications carefully . . . you'll find, through comparison, that Mahon Rolling Steel Doors are built better to give you better service over a longer period of time. See Sweet's Files for complete information, including specifications, or write for Mahon Catalogue G-59.

THE R. C. MAHON COMPANY • Detroit 34, Michigan

Sales-Engineering Offices in Detroit, New York and Chicago • Representatives in Principal Cities

Manufacturers of Rolling Steel Doors, Grilles, and Automatic Underwriters' Labeled Rolling Steel Fire Doors and Fire Shutters; Underwriters' Rated Metalclad Fire Walls, Insulated Metal Curtain Walls, Electrified M-Floors, Acoustical and Troffer Forms, Acoustical Metal Ceilings, Steel Roof Decks, and Long Span M-Decks.

ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

The illustration above shows four Mahon Power Operated Rolling Steel Doors, 18 Ft. x 14 Ft., installed in a new addition to the plant of Remke, Inc., Roseville, Michigan, Builders of Commercial Truck Bodies and Trailers.

MAHON

14 cars and trucks per minute today . .

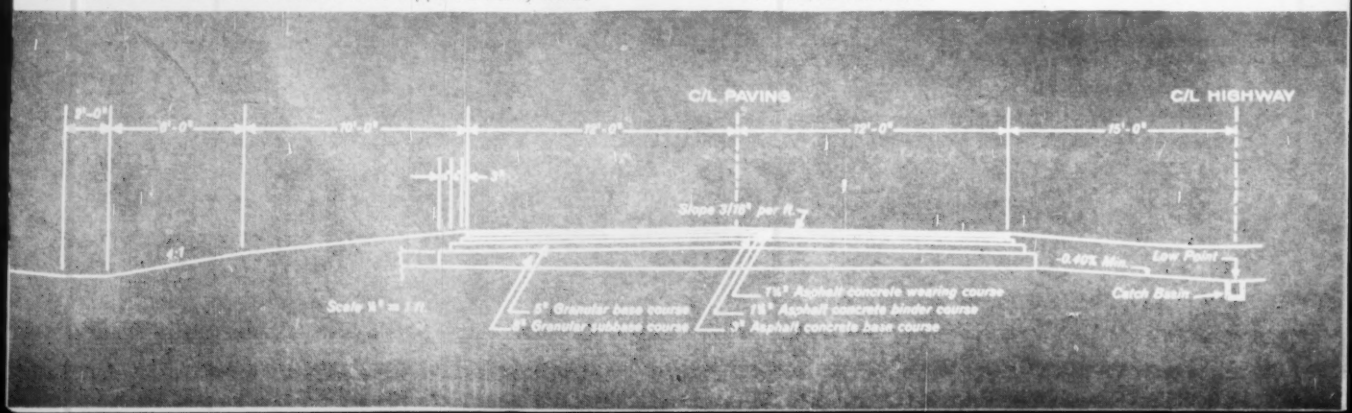
Here's one reason why Ohio's

Pounding traffic! Growing traffic volume! Greater and greater axle loads!

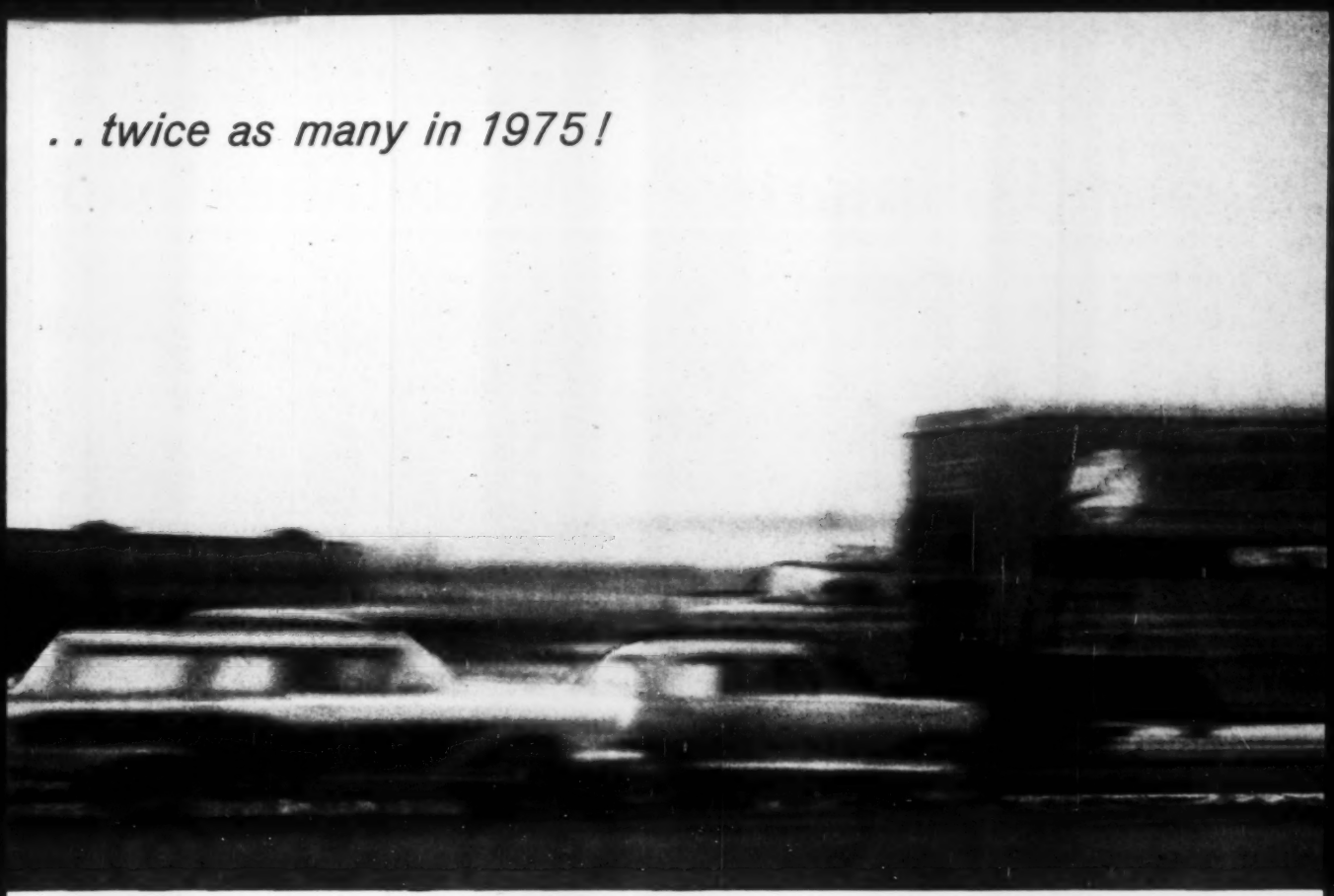
These assaults on pavement structures are **not** restricted to the 90-10 Interstate highways. They're common problems faced by engineers responsible for thousands on thousands of miles of road like Ohio's new State Route 73 . . . roads which are to be built largely out of State funds and wholly maintained with these monies.

In most terrain these roads . . . like your Interstate roads . . . should be Asphalt-paved. For many reasons! Perhaps the **most** important is that modern Asphalt

Typical of modern heavy-duty Asphalt sections is this one for Ohio's 5-mile State Route 73 between Middletown and Franklin. Median section is modified to a raised and curbed 15-foot section in urban areas. Pavement must support a heavy traffic of trucks carrying steel, machine tools and other industrial products produced locally. Cost per sq yd for this Asphalt road $3.03; $2.00 per sq yd under the prevailing price for reinforced concrete.



. . twice as many in 1975!



new Route 73 is Asphalt-paved

pavement structures are being built today to handle **any** desired loads with **any** desired built-in durability . . . **and these roads save money.** Cost less to build, less to maintain.

Your State can lay more road for the same money if you design for Asphalt concrete. More road means the traffic load on **all** pavements in your State can be kept at a maintenance-saving minimum.

THE ASPHALT INSTITUTE
Asphalt Institute Building, College Park, Maryland

Glacial till in right-of-way favored Asphalt pavement construction. Whenever sub-soil of this type is found it provides excellent natural subgrades for Asphalt paving. Proximity of suitable crusher-run aggregate also favored use of Asphalt on Route 73.

Comfortable! Durable!... because it's modern Asphalt concrete. Notice the smooth-riding, skid-resisting surface. Notice the visibility, too, of the traffic markings on Route 73. With Asphalt concrete, this road sets a standard for quality construction.

To Improve a Mountain Road:

Four-lane road into California's Tehachapi Mountains is being widened to eight lanes.

Keep It Steep, But Make It Wide

California is spending $7 million to build 6½ miles of eight-lane freeway over a route that now carries only 15,000 vehicles a day. And even by 1980 the road is only expected to handle 33,000 a day.

Reason for the hefty expenditure: Grade is nearly 6% for almost the whole length and heavy trucks make up one fourth of the vehicle count.

The construction is at the southern end of the San Joaquin Valley on Interstate Highway 5 (U.S. 99), the main Pacific Coast north-south route. Here the highway leaps from the broad relatively flat valley up a narrow canyon into the Tehachapi Mountains, which separate California's rich agricultural center from the industrial and population areas in southern California. The concentration of heavy trucking is high.

In this terrain the only feasible alternate to the 6% grade would have been 12 miles of 3% grade. Design engineers figured the shorter length of steeper grade would be cheaper for all concerned.

Construction problems are numerous for Guy F. Atkinson Co., holder of the $6.9-million contract.

Traffic must be handled in the narrow canyon during the nearly two-year construction period.

Transmission lines and gas and oil pipelines and other utilities must be coped with.

Some 9,000 ft of 8 x 10-ft concrete box conduit must be built.

Heavy grading operations, including more than three million cu yd of excavation are included.

And the 6½ miles of eight-lane freeway is to be paved with 8 to 10 in. of concrete.

• **Historic route**—The new road follows the Grapevine Canyon up into the Tehachapi Mountains. The canyon was key to location of the original state highway completed in 1914. This section and the rest of the Tehachapi Mountain crossing called the Ridge Route replaced a complex of county roads using a much more circuitous route between Bakersfield and Los Angeles and including grades up to 30%.

The old Ridge Route with its tortuous curves was replaced in 1933 by a "modern" three-lane highway. This reduced total curvature from 38,571 deg to 3,062 deg and increased minimum curve radius from 70 ft to 1,000 ft.

The three-lane road was later expanded to four lanes. And, after several serious accidents due to runaway trucks on the steep grade, a concrete barrier was erected in the highway median (ENR July 10, 1947, p. 102).

The southbound lanes of the new freeway use for the most part the existing Grapevine Canyon grade. The new roadbed will be completely repaved to higher standards.

The northbound lanes are all being built on new alignment with a minimum curve radius of 2,500 ft.

In the narrow upper reaches of the canyon the freeway occupies the entire canyon floor width riding on top of a concrete conduit that will handle flow of Grapevine Creek. In the lower part of the canyon the northbound lanes are separated from the southbound lanes by as much as 1,500 ft—that's quite a median strip.

In computing the traffic-carrying capacity of the freeway, the truck traffic was converted to the number of equivalent passenger cars. For example, a truck traveling at 20 mph passing another traveling at 15 mph would be equal to many, many automobiles in the time it would take up space in the passing lane. The eight-lane design in effect means two lanes in each direction for trucks and two lanes for autos.

Peak traffic on the Ridge Route comes on holiday weeks. Although truck traffic is then relatively low, increased auto traffic more than compensates.

• **Thicker pavement needed**—Existing concrete pavement on the Grapevine grade has been badly beaten by the slow-moving heavy trucks. And it suffered significant damage in a series of earthquakes in 1952.

Thickness is as much as 8 in., but most of the pavement was laid before adoption of careful subgrade preparation practices.

The contractor is now increasing thickness on the outside two lanes. The uphill truck lanes will be 10 in. thick, the downhill truck lanes, 9 in. thick. Inside lanes will be the standard 8 in.

Under the 10 in. of concrete will be 4 in. of cement treated base, 4 in. of untreated, carefully-compacted, base material and 8 in. of select material. Where the concrete is only 8 in., the untreated base thickness will be increased to compensate for the thicker concrete in the outside lanes.

Each set of four lanes includes a 48-ft width of concrete pavement making up four lanes, a 10-ft right side shoulder and an 8-ft left side shoulder. The shoulders are paved with plant-mix asphaltic concrete.

All existing concrete pavement will be either overpaved or removed. Where new pavement overlays the existing concrete, both cement treated base and untreated base are laid down over the old concrete to a thickness of at least 7 in.

The contractor plans to pave in 24-ft widths. This is a relatively new practice in California and it will be the first time the Atkinson Co. has used 24 ft widths on a highway paving job.

• **Three-stage job**—Bids for the contract were opened in April, 1958, with the award following a few weeks later. Important bid figures include $0.60 per cu yd for 3.3 million cu yd of unclassified roadway excavation, $0.033 per station yard for 125 million station yards of overhaul (over 500 ft), and $12.50 per cu yd for 88,000 cu yd of concrete pavement.

The contract allows 520 working days for completion, which is expected in June, 1960.

One reason for the long construction period: A prescribed three-phase work sequence aimed at keeping traffic flowing smoothly through the project.

First stage of construction, now practically completed, includes two miles of new alignment moving the existing route. This is at stretches where the highway encroaches on the new northbound lanes.

Second stage includes the entire new northbound section. After this is completed next year, traffic will be moved onto it on a four-lane basis.

In stage three the remaining four miles of the existing road will be repaved.

• **Grading operations**—Roadway excavation—over three million cu yd—comprises a major part of the construction effort. During early stages of the operation much of the earthmoving has been handled by carrying scrapers. Excavation rates have been in the 12,000 cu yd a day range.

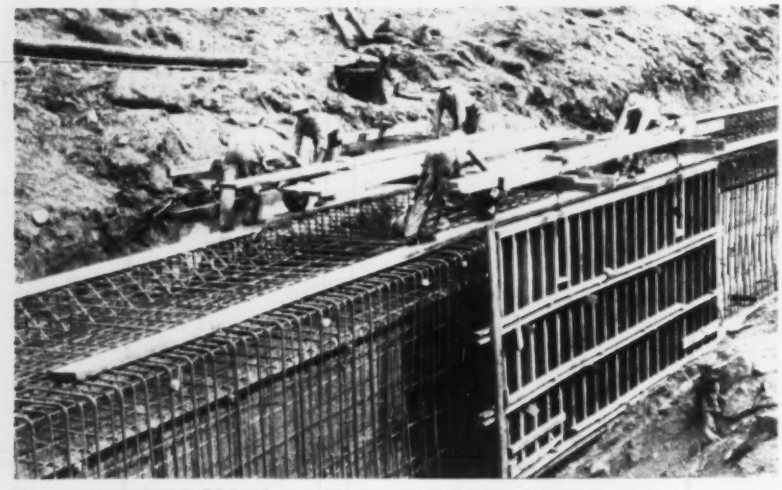
For push loading the material involved, the contractor found he had to use two tractors in tandem at times.

In one particular grading sequence 10 scraper units were used on a 1¼-mile downhill haul. The borrow area was serviced by tractors and a motor grader.

Some tractors were equipped with

. . . Moving dirt and a stream in a steep, narrow canyon

TRACTORS IN TANDEM push-load scraper. Contractor found tandem loading useful on some of the three million cu yd to be moved.



DOLLY SUPPORTS FORMS for sides of 8x10-ft box conduit as it rolls on top of reinforcing steel. Canyon's stream will flow inside conduit.

bulldozer blades and ripper teeth. These were used for pioneering purposes as well as pushing. Others were used above for push loading.

When several scrapers arrived at the pit at about the same time they were push-loaded by single tractors. But generally the units were loaded by a pair of tractors. Of course, this procedure varied for the material encountered; some material could be effectively loaded with single tractor pushing.

A good percentage of the excavation yardage involves relatively thin sliver cuts on the steep sides of the canyon. Some of these are so thin they cannot be pioneered by a bulldozer.

Much of this sidehill excavation will be handled by a powerful electric shovel loading into bottom-dump trucks for hauls in excess of two miles. The shovel will be rigged with a 6 cu yd bucket instead of the normal 8 cu yd bucket.

Fills up to 90 ft deep are carefully compacted with close attention to moisture content. Equipment includes sheepsfoot rollers, pneumatic tired rollers and tamping rollers.

• **Concrete conduit**—A major feature of the early construction operations has been casting of more than 9,000 lin ft of 8 x 10-ft concrete conduit. This box will handle Grapevine Creek, which, due to the steep slope, has a design capacity of 3,000 cfs. Normal creek flow is just a trickle—less than 500 gpm. But storm conditions can increase flow tremendously.

The culvert was bid on a lineal foot basis with bid figures ranging from $55 to $92 a ft. The higher figure is for the maximum section, which includes 17½-in.-thick walls, 21½-in.-thick roof and 24-in.-thick invert.

Design called for either precast or cast-in-place construction. Atkinson elected to cast the conduit in place.

The invert was paved first. Then the walls and roof were cast monolithically in 100-ft-long pours. Forms were in panels of 20 ft lengths. Although the culvert winds around, design permits chords as long as 20 ft.

Side forms are handled by a rubber-tired dolly that rides on the reinforcing steel. A pair of 20-ft-long side forms are attached to the dolly and it is pushed along the top of the steel on a board runway.

The Atkinson people have set up a batch plant in the middle of the job that handles all the concrete work. Concrete for the conduit and for the three bridges on the job is truck mixed. Concrete for paving operations will be dry batched. Aggregate manufacturing has been subcontracted to Terminal Construction Co. of Little Rock, Calif.

• **Other studies**—Detailed study has been given to putting the entire road on one side of the canyon. But this would have resulted in tremendous excavation quantities and would have complicated the traffic problem during construction.

Consideration was also given to eliminating the 6% grade. The slope is almost continuous for the entire 6½ miles as the project rises from El 1,420 to El 3,200. The only feasible alternate route would have been 12 miles of 3% grade.

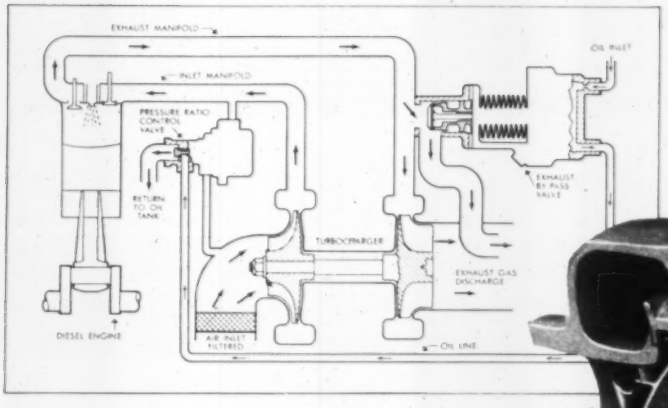
But this route was on an entirely new alignment; excavation would have reached astronomical figures, and there would be the same problem with truck traffic on the 3% grade as on the 6% grade. Tests indicated increased truck travel time, despite the decreased grade. And the extra length would have penalized auto traffic.

The canyon—most direct route from the oil fields of Kern County to the Los Angeles area—is packed with utilities. There are at least five oil lines from 8 to 16 in. dia and two large gas lines, one 26 in. dia. These must be accounted for in the construction operation. And Southern California Edison Co. is moving a major transmission line.

The Grapevine grade construction is a project of the California Division of Highways under the direction of W. L. Welch, district engineer, District VI, Fresno. Design was prepared under the direction of A. G. Fluter, district design engineer. Resident engineer is Norman Lambeth.

Project manager for Guy F. Atkinson Co. is Evan Millington.

Most significant advances in turbocharging



Pressure ratio control valve

Exhaust by-pass valve

AiResearch Industrial Division has made these vital contributions to the diesel industry

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- built the first pressure-ratio control system to keep the turbocharger operating at peak efficiency continuously...
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- uses compressors with exceptionally broad characteristics to give best efficiency over a wide range of engine operation...
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- currently turbocharges more than six million horsepower in diesel equipment...
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Your inquiries are invited.

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Prestressed Concrete Beam Design
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DEPT. F-9, LOS ANGELES 45, CALIFORNIA

New Cast-Iron Pipe Plant . . .

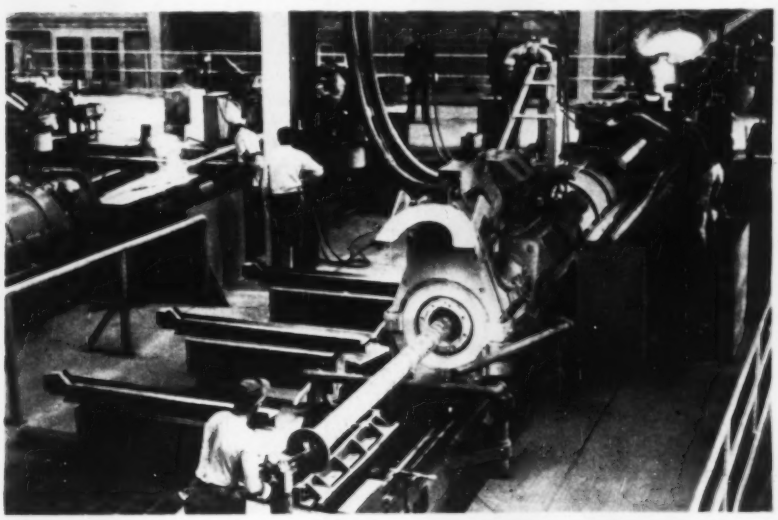
The Midwest has an important new source of cast-iron pressure pipe in the $6.5-million plant of James B. Clow & Sons, Inc., at Bensenville, Ill.

It's an expandable building with 100,000 sq ft of space for manufacture of pipe 6 in. to 16 in. ID in 18 ft lengths. The plant uses the metal-mold centrifugal process and employs extensive automation.

At full operation it will produce 80,000 tons annually.

Leonard Construction Co., Chicago, was general contractor.

Here's a quick look at how the plant operates. . . .



. . . Uses Latest Production Methods

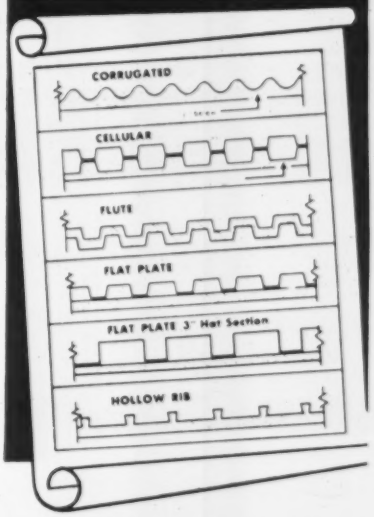
The art of making cast-iron pipe is centuries old, but present day methods, like those developed by Clow for its Bensenville plant, add considerable science to the art.

Raw materials—pig iron, scrap iron, coke and limestone—are weighed in proportions to meet specified standards and charged into the top of an 80-ft-high cupola about 8 ft in dia. Air is blasted into the bottom of the cupola to accelerate burning of the coke, which melts the iron charge.

The molten iron flows from the cupola continuously at 2,700 F into a tilting mixing ladle that holds 10 to 12 tons. Smaller 2-ton transfer ladles, filled from the mixing ladle, carry the hot iron to casting machines.

The Clow plant has three casting

WHICH OF THESE STEEL FLOOR SYSTEMS SERVES YOUR PURPOSE BEST?



No matter which system you adopt, here's the biggest news in construction today!

NEW ZONOLITE®

DIRECT-TO-STEEL FIREPROOFING BONDS DIRECTLY TO UNDERSIDE OF STEEL FLOORS!

- Saves Time
- Cuts 7" of Height per Story
- Gives 3- and 4-hr. Fire Ratings
- Adds Acoustical Benefits
- Simplifies Tenant Changes

Quickly applied by hand or machine, Zonolite fireproofing bonds directly to the underside of steel floors. Slices days off former schedules. Permits use of lighter, less costly structural members. Saves 7" height per story—fits a 14-story building into 13-story height without reducing room height.

Zonolite fireproofing provides 3- and 4-hour fire ratings. Has exceptional noise-reducing character, often making further sound conditioning needless. May be left "as is" to provide finished ceiling. Because it's up high, out of the way, tenant changes may be made without cutting through Zonolite fireproofing.

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for new authoritative data on direct-to-steel fireproofing

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Without obligation, send me specifications and data sheet PA-35 on Zonolite Direct-to-Steel Fireproofing.

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*Firm*_____

*Address*_____

*City*_____ *Zone*____ *State*____

Chevy power is tough—

and proves it on bruising off-the-road hauls!

That Series 100 Chevy tandem above takes a terrific pounding as it hauls huge loads of gravel or fill dirt into the heart of California's redwood country. It goes miles off the road, makes up to 24 trips a day through rocky forest land. Yet owner Bernard Conti, of the Conti Sand & Gravel Company, reports only one hour of downtime in 20,000 miles on this truck-killing road construction job. And Chevy's tough power gets the truck through faster, Mr. Conti says; assures more trips—more profits—per day!

Hauling outsized loads of fill dirt through California's forests calls for a heavy-duty truck that's rock-rugged and powerful as they come; one that's soundly built down to the last bolt. And the Conti Sand & Gravel Company bears witness to the fact that Chevrolet is just such a truck. They're completely satisfied with their Series 100 model, from the dependable pulling power of the big 230-h.p. Workmaster V8 to the work-whipping qualities of the tough-built chassis components. And you'll be equally satisfied with whichever Chevy heavyweight or middleweight *your* work requires!

Mr. Conti indicates that Chevrolet's Powermatic* transmission is of special importance in this rugged service. It helps him to bull through the tough spots with exceptional ease. This fully automatic 6-speed transmission virtually eliminates manual gearshifting! It also provides a Hydraulic Retarder that helps you control truck speed and saves wear on the service brakes.

**Optional at extra cost, Series 50, 60, 70, 80, 90 and 100 models.*

No job's too tough for a

Chevy's powered to cut costs and keep going on your tough off-the-road hauls!

That's for *sure*, whether you use mighty middleweights or high-capacity heavyweights—whether you prefer V8's or 6's.

Take Chevrolet's 1959 big-truck V8's, for example. As indicated by that tough truck job pictured above, these modern engines are out to whip any work that comes their way. They've got what it takes to do it. The *shortest piston stroke* of any comparable truck V8's: a sure sign of more work on less fuel. Compact design that cuts down on truck weight and helps assure the biggest possible payloads. Scores of up-to-the-minute features that know how to trim overhead: full-flow oil filter, hydraulic valve lifters, hard-faced exhaust valves and hardened valve seats, extreme-duty Moraine 400 bearings, rotor-controlled governor, overspeed warning light and many more.

And with a *complete* lineup of modern V8 powerplants—including 160-h.p. Trademaster, 160-h.p. HD Taskmaster, 175-h.p. HD Super Taskmaster, 185-h.p. Workmaster Special and 230-h.p. Workmaster—Chevy can match the engine to your work, ideally.

Or if you prefer 6's, Chevy's *still* your best bet. Standard in Series 40 models is the 135-h.p. Thriftmaster 6, better than ever for '59 with a new Economy-Contoured camshaft that improves gas economy by 10%! And in Series 60 there's a new edition of the 150-h.p. Jobmaster 6. It offers new durability stemming from new tougher built pistons and Stellite-faced exhaust valves. Both of these famous 6's provide plenty of hard-pulling torque.

Six or V8, you'll go a long way before you see the likes of this '59 Chevy engine lineup. Actually, there's only one *best place* to go for all your trucking needs—and that's to your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

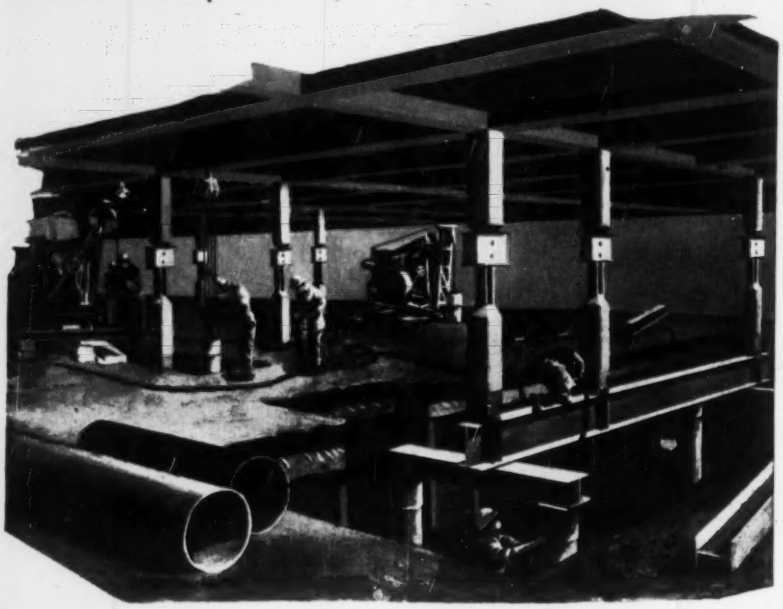
Chevrolet truck!

CHEVROLET

ANOTHER PROBLEM SOLVED BY SPENCER, WHITE & PRENTIS

UNDERPINNING OF PIER POSES MANY CONSTRUCTION PROBLEMS

Timber and rip-rap obstructions—vibration problem—limited headroom—complicate installation of 14-inch Drilled-In Caissons



Project: Underpinning Pier 3, Hudson River, for United Fruit Co.
Owner: Department of Marine & Aviation, City of New York
Engineers: Dept. of Marine & Aviation, Captain L. H. Rabbage, Chief Engineer
United Fruit Co., H. C. Ames, Division Engineer
Consultant: Moran, Proctor, Mueser & Rutledge

Underpinning was required for Pier 3 on New York City's Hudson River. Sketched above is a portion of the new support system, which consists of 14-inch steel pipe piles socketed into bedrock.

To install this underpinning with minimum vibration and to carry the piles through rip-rap, timber cribs and hardpan, specialized drilling procedures were used, the design of the drill rigs being modified to operate in the very limited headroom available.

When you encounter foundation problems, Spencer, White & Prentis is long-practiced in prescribing sound solutions.

CATALOG ON REQUEST

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. . . Pipe plant

machines, making pipe-casting operations quite flexible. Under normal operations, two machines each cast a certain diameter pipe in the 6 to 16-in. range. The third machine may be undergoing routine maintenance or being adjusted to cast its next run of pipe.

Pipe is cast in a steel mold that revolves in a water box while water circulates around it.

The water box is mounted on wheels and runs on a slightly inclined 40 ft track. At the upper end of the track is a ladle from which the hot iron is poured down a chute and along an 18 ft trough into the spinning mold.

• **Casting cycle**—A casting cycle starts with the machine at the bottom of the incline, where a special sand core is placed to form the inside contour of the bell end of the pipe.

As the mold starts revolving and the water box moves up the track toward the machine's ladle the ladle tilts, and the iron flows out and down the trough. The tilting is timed so that the molten iron reaches the lower end of the trough as the machine hits the top of the "hill."

An electric eye actuates the machine. As soon as the bell end of the mold is filled with iron, the carriage with the revolving mold starts down the incline. Centrifugal force forms the pipe as the iron flows into the spinning mold

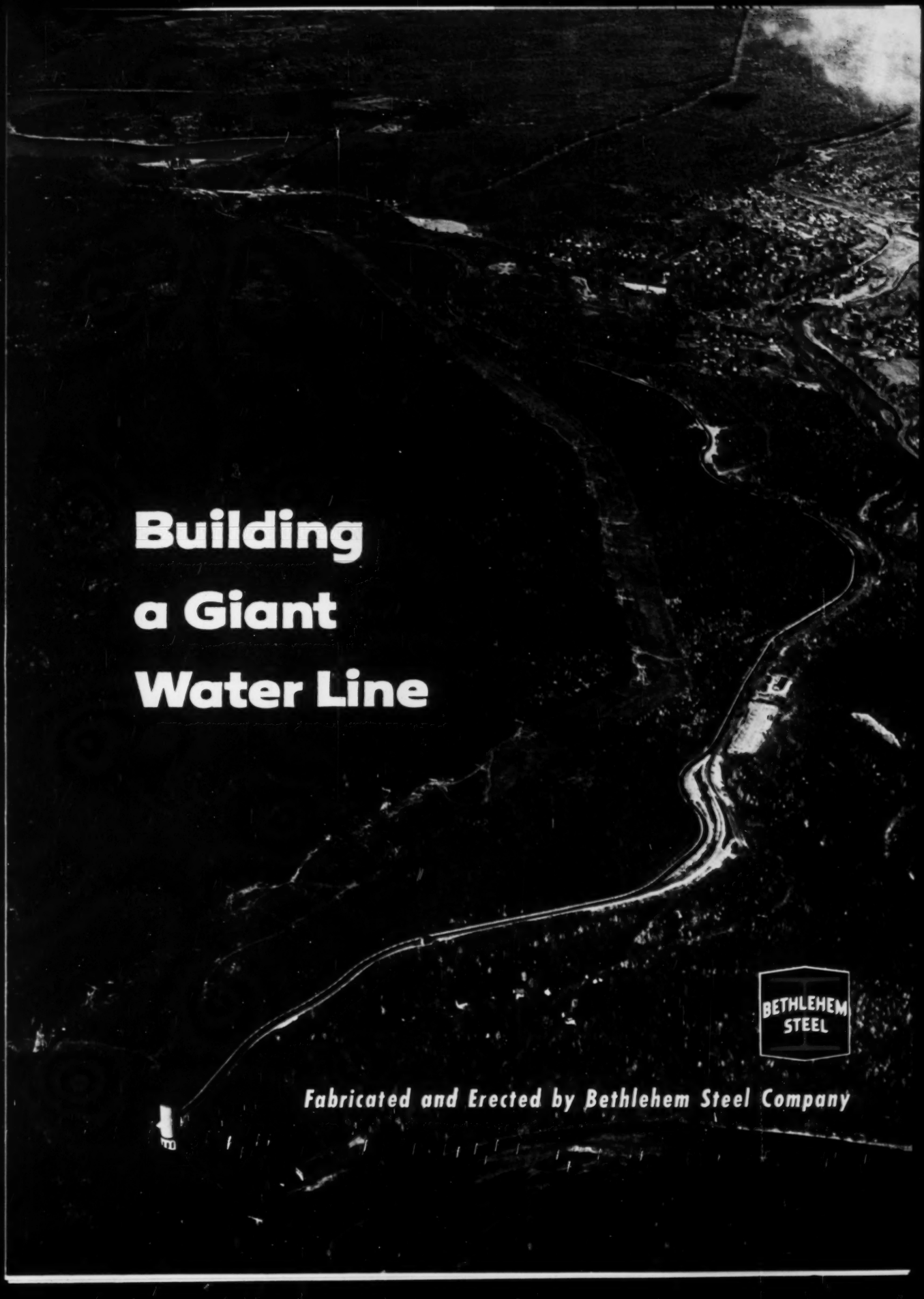
When the machine reaches the bottom of the incline, the mold continues to revolve until the pipe cools sufficiently to maintain its shape and permit extraction. Then the operator inserts a pulling device into the pipe and starts the water box back up the track, stripping the pipe from the mold.

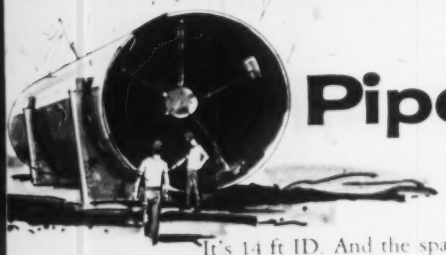
The newly cast pipe is rolled aside and, as the carriage comes back down, the mold is coated with a wet refractory spray. The operator inserts another bell core, and the cycle repeats. One machine can make about 40 pipe an hour in 6-in.-diameter sections, 18 ft long.

From the centrifugal casting machine, the pipe is moved by overhead crane, weighed and calipered before entering the annealing oven. There it is heated to about 1,725 F, then slowly and uniformly cooled, in automatically controlled cycles.

On the finishing run the pipe is cleaned, burnished inside, dipped in a tar bath, and subjected to hydrostatic pressure tests of 500 psi minimum. Quality control tests are also made continuously on samples of molten metal taken during casting operations.

The complete cycle takes about three hours, from the time raw materials are charged into the cupola until they are converted into finished pipe at the end of the production line.


Building
a Giant
Water Line
BETHLEHEM
STEEL
Fabricated and Erected by Bethlehem Steel Company



Pipe big enough to drive

It's 14 ft ID. And the spans you see here are 80 ft, center-to-center of the supporting ring girders. To the best of our knowledge it's the world's longest above-ground steel pipe line of such large size. And there's not an expansion joint in it!

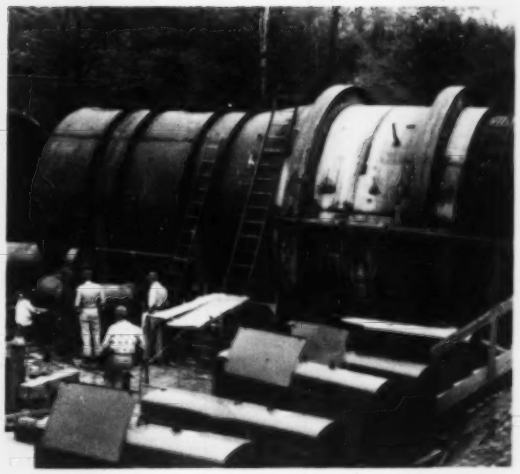
Completed in late Summer, 1958, the line is owned by Pennsylvania Power & Light Company. In the mid-1920's PP&L dammed the waters of Wallenpaupack Creek near Hawley, in northeastern Pennsylvania, and constructed a hydro-electric plant 3½ miles from the dam. To carry water from the dam to the surge tank, they built a 14-ft-8-in. OD (14-ft-ID) flow line. It was made of Douglas fir staves, reinforced with steel rods, and supported on riveted steel saddles 8 ft center-to-center.

In recent years, as shown here, the wood-stave line sprayed water from innumerable leaks. The steel saddles and tie rods, supplied by Bethlehem some thirty years ago, were still in relatively good shape.

Through the years the wood staves deteriorated to the point where maintenance was no longer economical or feasible. So PP&L, in consultation with Bethlehem engineers, decided to substitute welded steel pipe, replacing approximately one-half of the line in 1956, the remainder in 1958. Furthermore, to expedite the start of work on the first section, they utilized as much as possible of the old material. The concrete piers were re-used, as were the steel saddles (requiring that the outside diameter of the steel pipe be the same as the wood line—14 ft 8 in.).

Experience gained in building the first section showed that it would be advantageous to re-design the line, rather than again re-use the old saddles and

In some locations there were overhead obstacles such as highway bridges and power lines. There the cans were pushed into place by a gasoline locomotive running on temporary tracks, or by a tractor.



In order to begin construction of the downstream half in 1956, the entire line was de-watered. Then a Bethlehem crew quickly installed this bulkhead section. Immediately the upper half of the line was re-filled, as the wood would have collapsed if allowed to dry out. In order to withstand the thrust of about 280 tons, the bulkhead was anchored by huge, gravel-filled cribs. The tie bars shown here (about 70 ft long, 1⅞-in. diam., made of alloy steel, heat-treated to a yield strength of 100,000 psi) were also supplied by Bethlehem.

Finishing the job. The last can, temporarily mounted on saddles, is lifted into place by an 80-ton-capacity crawler crane with an 80-ft boom. The can weighs 18 tons, and measures 38 ft - 6 in.

your car through

piers. Of primary interest in the new design are the long spans between ring girder supports. The entire 3½-mi line has no expansion joints; rotating and self-relieving anchors compensate for expansion and contraction.

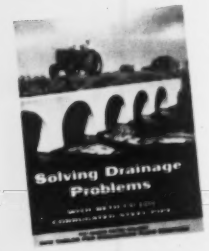
In a fabricating yard set up along the line, the "cans" were assembled and welded. Each consists of five formed ½-in. plates shipped from our Steelton, Pa. fabricating works. The ring girders were fabricated in halves at Steelton, and assembled and welded in the field. The various members for the anchors were also fabricated before shipment to the job site for field assembly and erection.

Welders at work. All welds were carefully inspected, and were also spot-radiographed.

BETHLEHEM STEEL

BETHLEHEM MAKES MANY TYPES OF PIPE. For many years Bethlehem has been a leading supplier of welded, coal-tar-enameled steel pipe for water mains, up to the largest diameters that can be shipped. We manufacture oil and gas transmission pipe up to 42 in. OD, meeting all API specifications. We also produce smaller-diameter pipe by the butt-weld and electric resistance-weld processes, for all applications.

A Complete Line of Steel for Construction



BOOKLET 425A. This informative manual is a "must" for anyone interested in drainage. With tables for evaluating flow friction.

BOOKLET 127C. Describes a wide variety of installations. Also available: Catalog 223, Bethlehem H-Piles; and Catalog 433, Bethlehem Steel Sheet Piling.

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CATALOG S-58. Describes standard structural shapes, with information and tables helpful to designers.

CATALOG 392. Summary of our full line of steel products for all phases of highway construction.

CATALOG 493. Recommendations for construction applications. One of many publications for users of wire rope, strand, and fittings.

HANDBOOK 3938. Complete information on continuous butt-weld and electric resistance-weld steel pipe.

BOOKLET 482. How the nation's longest cantilever bridge was built, in words and pictures. Also available: Booklet 454, Building the Walt Whitman Bridge.

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Also send literature available describing these products.

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Drill steel, hollow and solid
Dowels, hook-bolt
Dowel units
Fabricated steel bridges and buildings
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Guard rail; beam and cable
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Posts, steel guard rail
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BETHLEHEM STEEL

BETHLEHEM STEEL

Folder 680 593, Printed in U.S.A.

Fast haul roads pay off. Question is . . .

How Much for Haul Roads?

Moving huge amounts of materials fast and at least cost is always a big basic problem for the contractor. He now has the tools to do the job: large, speedy and efficient earthmovers.

But he almost never squeezes the full potential out of those giant modern machines.

Reason: The contractor doesn't always give enough attention to his haul roads. And the crucial haul-cycle time suffers.

With today's high-axle loadings, resistance of the road surface to rolling can become a costly drag. Long, steep grades can slow high-speed machines to a money-consuming crawl. Sharp curves and narrow passage can cause expensive interruptions.

Still, the question is: How much work and money can profitably go into improving these important roads?

Caterpillar, one of the giants in the earthmoving equipment field, has a quick and easy method for determining the answer. It involves a simple rule; machine specifications and the bid prices of the material being moved. An example illustrates the method:

Assume the job involves five 20-cu-yd scrapers, 33-cent dirt, 1,000-ft-long hauling distance and 12-to-20-mph hauling speeds.

Use the rule: cycle time = fixed time + variable time.

Figure fixed time—including loading, dumping, acceleration and deceleration—at about three minutes when operating in top gears. Variable time is the haul-and-return distance divided by travel speed in ft per min (1 mph equals 88 ft per min).

So for the 1,000-ft haul at 13 mph:

$$\text{Cycle time} = 3 \text{ min} + \frac{2{,}000}{1{,}144} = 4.8 \text{ min.}$$

Thus, it follows that in the 12-to-20-mph range, each mile per hour gained in travel speed by the 20-cu-yd scraper will pay off with about 5 cu yd more material moved each hour. It's assumed that the machines work 45 min of each hour.

A gain of 3 mph will pay off with an extra 75 cu yd per hour for the five-scraper fleet. This is done without adding more equipment. (A further bonus from smoother haul roads is more road safety and longer machine life.)

Put into dollars and cents, the contractor moving the 33-cent dirt could spend up to $25 more on the haul road for each hour the machines roll over it.

On a 100,000-cu-yd cut, a 3-mph gain in haul speed would justify spending up to $2,460 more on the road to get this gain.

Where should this extra money go? (Just assigning another grader to keep the road smooth seldom solves the haul-road problem.) Here are some possibilities to consider:

- Reduce rolling resistance by mechanical compaction or other forms of stabilization.
- Get rid of the soft spots caused by poor drainage. Use culverts and fill if necessary.
- Cut out long, steep grades. Even building a new road sometimes pays off.
- Ease, or remove, sharp curves and narrow passages.
- Put down a non-skid surface such as gravel.

KOH-I-NOOR

Precision-Matched Instruments

Koh-I-Noor offers draftsmen an important new concept—a comprehensive line of instruments and accessories meticulously matched to achieve a new high in professional performance.

ADAPTO-CLUTCH LEAD HOLDER and EJECTOMATIC LEAD DISPENSER

Two Koh-I-Noor products designed to work together for greater convenience. Lead holder's non-slip clutch takes all 17 degrees of Koh-I-Noor lead. Ejectomatic Dispenser feeds lead to holder without need to touch it.

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A smoothly performing ruling, lettering and tracing pen that uses India or regular ink with equal facility. A tremendously convenient, time-saving, reliable instrument. Fully guaranteed. In five precision line widths:

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B.F.Goodrich

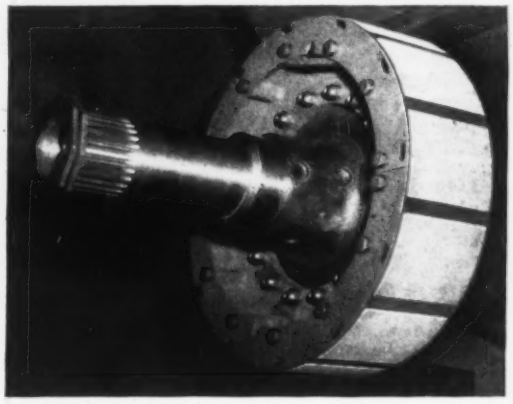
How long is a new product new?

As far as we are concerned, a product is "new" as long as nobody else comes up with an idea that's as good. And that's why B. F. Goodrich Hi-Torque Brakes are still new.

Today, more than a year after B. F. Goodrich Hi-Torque Brakes were introduced, we can still make the claim we started with: B. F. Goodrich Hi-Torque Brakes stop heavy off-road equipment up to twice as fast as conventional two-shoe brakes.

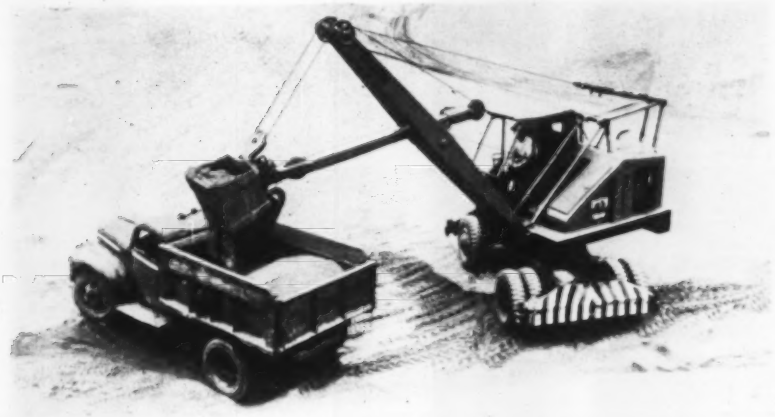
Full circle stopping power provides constant lining pressure, resists fade. Brakes require no lubrication, adjust themselves automatically. Operators work faster—with greater safety—even on terrain once considered unsafe. And B. F. Goodrich Hi-Torque Brakes are the only brakes with reserve power to handle those giant wheeled vehicles still on the drawing boards.

If B. F. Goodrich Hi-Torque Brakes are still new to you, now's the time to ask your equipment manufacturer for facts or contact B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Dept. EN-39, Troy, Ohio.



B.F.Goodrich ***Hi-Torque brakes***

New Products



Carrier-mounted, 11-ton-capacity crane is one of three . . .

Redesigned Crane-Excavators

Schield Bantam has introduced a redesigned line of ¾-yd. crane-excavator equipment, called the 350 series.

A carrier-mounted crane, the Model T-350, can lift 11 tons, largest in the ¾ yd field, states the manufacturer. Equipped with a backhoe, it will dig down to 17 ft. 7 in. As a shovel, the T-350 handles 115 cu yd per hour out of stockpile with a new ¾-cu-yd rehandling bucket; with dragline, 115 cu yd per hour of average material.

The C-350 crawler-Bantam comes with standard side frames or long frames for extra stability on crane work up to eight tons. It features independent travel, swing and dump. The C-350 will dig to 18 ft 10 in. as a backhoe. Equipped as a shovel, dragline or clamshell, it can handle 100 cu yd per hour working out of stockpile with rehandling bucket.

The self-propelled ¾ yd Model CR-350 will lift 11 tons. Travel, swing and hoist are independent. The one-man rig has a two-speed, no-shift, forward-reverse travel. Top speed is 11 mph. Schield Bantam Co., Waverly, Iowa.

A Big, Powerful Motor Grader

Caterpillar has put out its largest and most powerful motor grader. The No. 14, rated at 150 hp, weighs more than 29,000 lb. Over 22,000 lb. of this weight rest on the drive wheels.

The grader has a 12-ft moldboard, 27 in. high. Vertical lift of the blade is 17¼ in.; circle side shift to the right is 37¼ in.; to the left, 40¾ in. Maximum bank-cutting angle is 90 deg.

A turbo-charged engine rated at 150 hp has an 18% torque rise. There are six forward speeds and two reverse. Forward speeds range from 2.6 mph in first gear to 21.6 mph in sixth.

The grader features power brakes and power steering. The use of 10.00-in. rims for the 14.00x24 tires gives a wide rim base. This straightens side walls and reduces any side rolling. Caterpillar Tractor Co., Peoria, Ill.

(New Products continued p. 56)

Proved Cost Saver

CURE and SEAL CONCRETE WITH 1 PRODUCT

THOMPSON'S WATER SEAL

Eliminates wet sacks, papers, hosing and spraying

Spray deep penetrating, colorless Thompson's Water Seal on fresh concrete to cure and seal in one operation. Save time . . . save labor.

Effectively controls moisture loss for 28 days and beyond.

Assures uniform curing even in hot, dry weather.

Helps reduce checking, cracking, spalling.

Produces harder, dust-free surface.

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Permits adequate time for smooth troweling.

Send for technical bulletin and Contractors Case History file.

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Available in 5 and 55 gallon drums from building supply stores, paint and hardware dealers.

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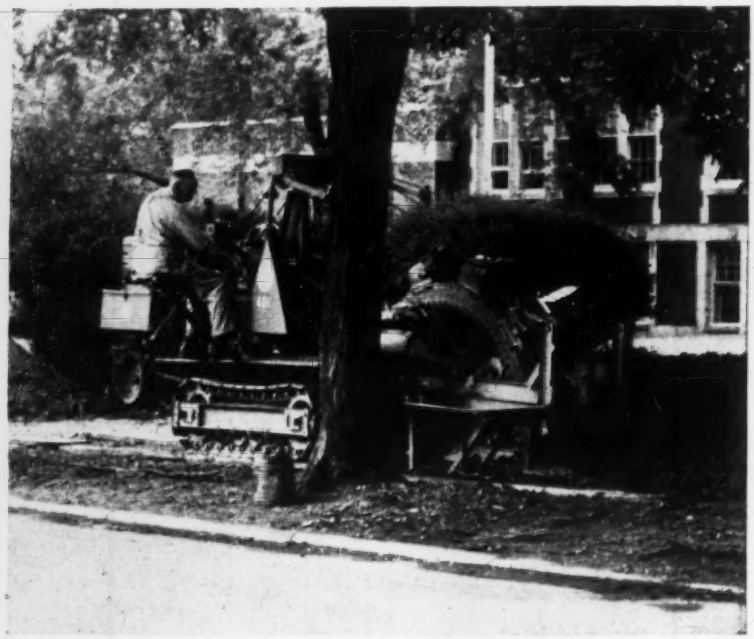

Nothing digs trench in the city like a Cleveland "Baby Digger"

PUTS TRENCH WITHIN 20 INCHES OF A PARALLEL WALL

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GIVES YOU THE RIGHT COMBINATION of POWER and SPEED FOR EVERY SOIL AND JOB CONDITION

If your jobs involve city and suburban trenching, a trim maneuverable Cleveland 92 is the trencher for you. This "Baby Digger" has the practical features and advantages that give you greater, more economical production in crowded areas *...more trench...in more places...at less cost.*

- Only 4' 6" wide over its crawlers.
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- Finest crawler on any trencher...long-lived...non-packing...easy-rolling...friction-free...sealed bearings...200-hour lubrication.
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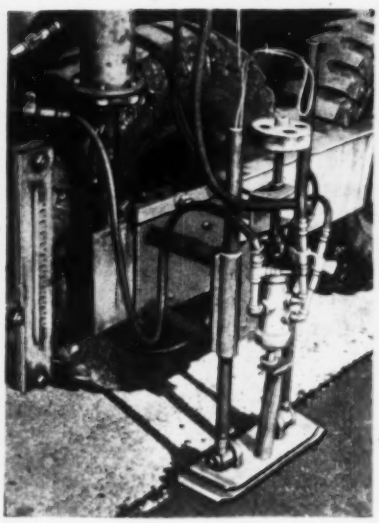


Automatic Matching Unit Assures Good Joints

A hydraulically operated, automatic joint-matching attachment fits Blaw-Knox's PF-90 bituminous paver finisher. It sets the thickness of the roadway course being laid to match elevation of the completed adjacent lane.

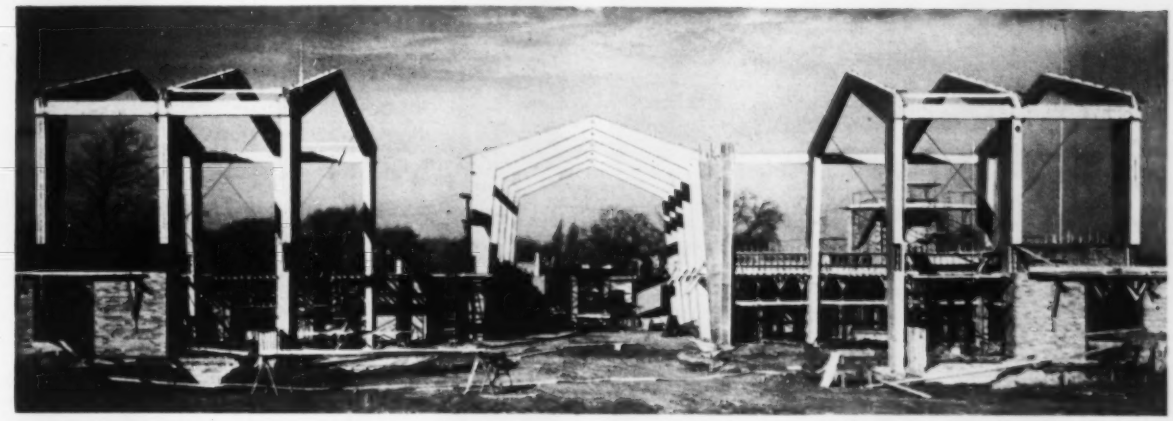
A tracking mechanism suspended from the attachment travels on the previously paved surface. It actuates hydraulic cylinders that control screed arm position. This eliminates continual observation and adjustment of the screed and provides high quality joints for multiple lane roads, says the manufacturer. Blaw-Knox Co., 300 Sixth Ave., Pittsburgh, Pa.

Pocket-Size Calculator Speeds Asphalt Figuring

A pocket-size calculator is designed to cut down the time it takes to figure asphalt paving requirements. It is said to simplify calculations of square footage and number of tons needed for a paving job.

The circular calculator comes in all-plastic or plastic-coated material. Hogan & Vecchio, 3713-A Arlington Ave., Riverside, Calif.

These soaring two-unit precast concrete arches are 36′ high at mid-point and 42′ wide.



PRECAST CONCRETE ARCHES

form basic structure for new church

Lehigh Early Strength Cement concrete is poured in arch form at Goodstone Mfg. Co. yard. Completed arches were trucked 5 miles to job site.

Three of the four cranes required to position the arches. Note two workmen securing joint between 11½ ton arch halves.

• The new St. Ambrose Roman Catholic Church of Rochester, N. Y., with its eleven precast structural concrete arches, is another example of the growing trend toward precast concrete in modern construction.

The arches, each higher than a 3-story building and weighing 23 tons, were cast in two sections at the Goodstone Mfg. Co. plant.

In precasting these arch units, the manufacturer used Lehigh Early Strength Cement for maximum efficiency and economy. For example, forms were stripped and ready for reuse in 18 to 24 hours. And a faster production schedule cut labor costs an estimated 30%.

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction.

LEHIGH PORTLAND CEMENT COMPANY
ALLENTOWN, PA.

Architect: Sanford Shanley, New York, N.Y.

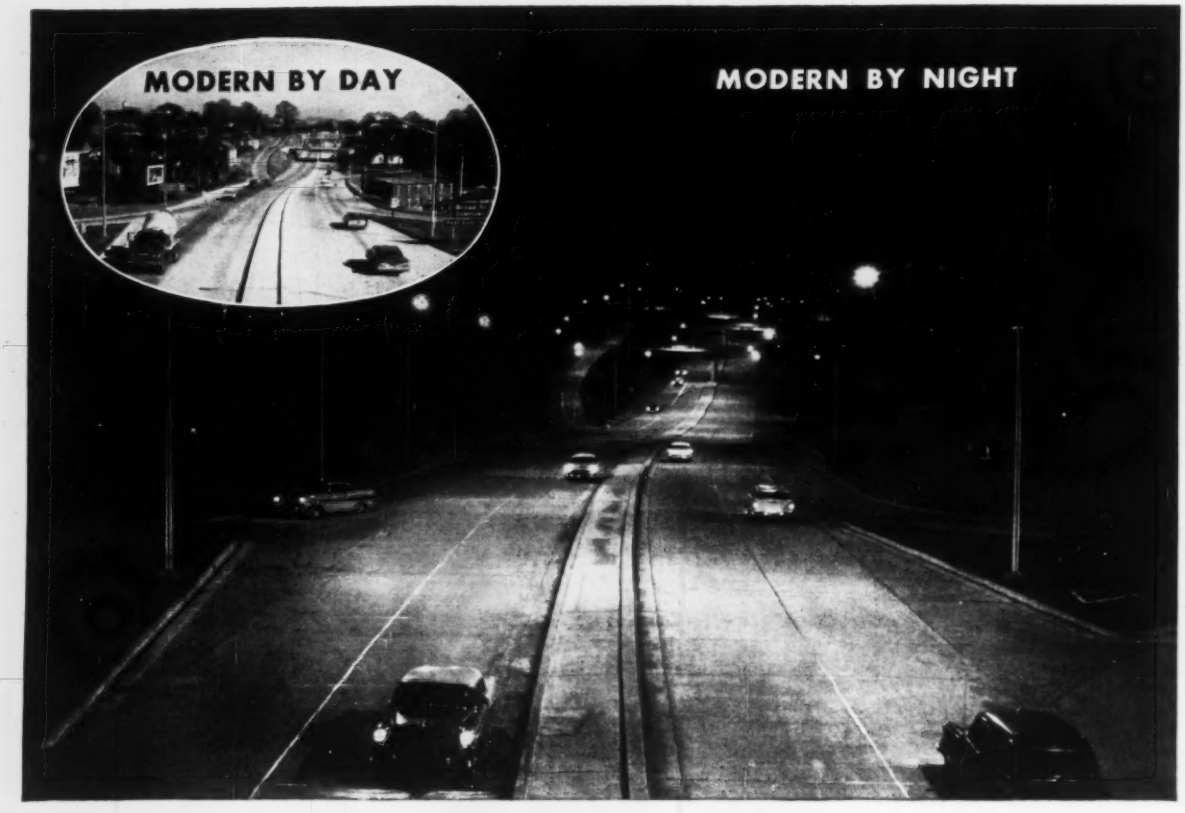
Associate Architect: Raymond Ashley, Rochester, N.Y.

Consulting Engineers: Severud-Elstad-Krueger & Assoc., New York, N.Y.

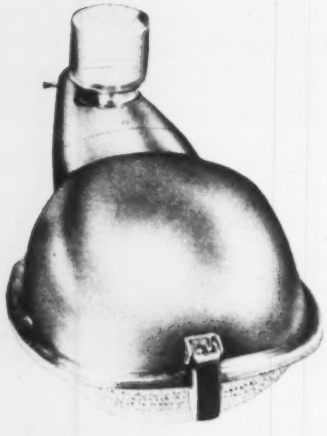
General Contractor: Frank G. Maggio & Bros., Rochester, N.Y.

Manufacturer of Precast Arches: Goodstone Mfg. Co., Rochester, N.Y.

- LEHIGH EARLY STRENGTH CEMENT
- LEHIGH MORTAR CEMENT
- LEHIGH PORTLAND CEMENT
- LEHIGH AIR-ENTRAINING CEMENT



Modern light on Winston-Salem Interstate link makes nighttime driving as safe as daytime



North Carolina's first Interstate mileage—a 3.1-mile stretch of Route 40 opened in Winston-Salem more than a year ago—is lighted for its entire length. In specifying modern roadway lighting, North Carolina Highway Engineers made the "Winston-Salem Expressway" as safe, convenient, and efficient a traffic carrier by night as it is by day. This is an opportunity —and challenge—open to every state.

America's annual nighttime traffic toll adds up to 20,000 deaths—nearly a million injured—close to two-billion dollars in cost to business and individuals. Experts agree that such slaughter and economic waste can be *cut in half* by modern roadway lighting.

And it isn't necessary to light every mile of roadway! The job can be done by concentrating on *seven deadly areas of driver decision:* entrances and exits, bridges and viaducts, intersections, underpasses and tunnels, interchanges, guide-sign locations, and heavily travelled stretches. Cost of such lighting is low—on the average close to 1% of total highway cost. Operation runs less than grass cutting and similar day-to-day maintenance.

Measured in terms of human safety, driver convenience, and traffic-carrying efficiency, a new highway without proper lighting is out of date the day it is opened. Make sure that all new highway mileage in your state is up-to-the-minute—by night as well as by day! General Electric Co., Outdoor Lighting Dept., Hendersonville, N. C. 453-9

AMERICA'S LEADING LINE of highway lighting equipment is ready to help you cut our nighttime traffic toll. Count, too, on expert application help from G-E lighting engineers at your nearby G-E Apparatus Sales Office.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Five men* direct a four-company venture formed for . . .

Designing Titan Missile Bases

The intercontinental ballistic missile era has spawned a giant architect-engineering firm that devotes its unique talents entirely to Titan ICBM bases.

The organization, Daniel, Mann, Johnson, Mendenhall & Associates, Los Angeles, has a contract with the Air Force for the design of two Titan operational bases and a Titan training base.

"I guess we're the only major architect-engineering firm in the country that has no other commitments and no sales force," says S. Kenneth Johnson.

DMJM & Associates is composed of key members of four companies. Each firm is expert in something involved in missile base construction. They are:

- **Leo A. Daly Co.**, Omaha, builders of the Strategic Air Command underground headquarters at Omaha.
- **Rust Engineering Co.**, Pittsburgh, designers and builders of process piping systems—among other things.
- **Mason & Hanger—Silas Mason Co., Inc.**, New York City, builders of tunnels and shafts and, through Atomic Energy Commission projects, acquainted with the effects of nuclear blasts on structures.
- **Daniel, Mann, Johnson & Mendenhall**, Los Angeles, architect-engineers for Atlas ICBM testing facilities at Cape Canaveral, Thor intermediate range ballistic missile launching pads and other Air Force projects.

Much of the credit for bringing together this collection of experience and resources goes to Mr. Johnson, a partner in DMJ&M. The four-company venture has its origins in the Air Force briefings on the Titan projects held in January, 1958. Ballistic Missile Division officials described to two dozen firms their requirements for the design of Titan facilities.

"At the briefings we brought in Rust," Mr. Johnson said. "We had worked with them on plant and office buildings for the Hammermill Paper Co., in Erie, Pa."

After the briefing, the two other companies agreed to join with DMJ&M and Rust in making a proposal for the work. Proposals, submitted by about a dozen of the concerns, included information on their experience and the manpower and equipment available.

The DMJM & Associates proposal was accepted and a fee was negotiated.

The nucleus of DMJM & Associates is a four-man control committee composed of a representative from each participating firm, and 60 specialists from the four companies.

The ICBM projects are supervised by the control committee, which reviews engineering drawings and serves as a co-ordinating unit, and project manager.

The five top officials and the 60 key employees remain on the payrolls of their respective companies.

There is a distinctly hush-hush air about the DMJM & Associates offices in Los Angeles. Everyone has undergone security clearance and the company files contain more than 1,000 classified documents.

The first of the Titan ICBM base projects assigned to DMJM & Associates will be at Lowry Air Force Base, near Denver. The site of the second base has not yet been announced, but it probably will be at Forbes AFB, Kan. Bids for underground installations at Lowry AFB went out last week (ENR Feb. 19, p 32) and work at Forbes AFB is expected to be advertised soon.

The Titan ICBM training base will be at Vandenberg AFB, Calif. It is under construction (ENR Jan. 29, p. 30).

* Left to right are George I. Seybold, of Rust; Stanley A. Moe, of DMJ&M, chairman; S. Kenneth Johnson, DMJ&M, project manager; Robert B. Jewell, of M&H-SM, and Claire E. Oncal, of Daly.

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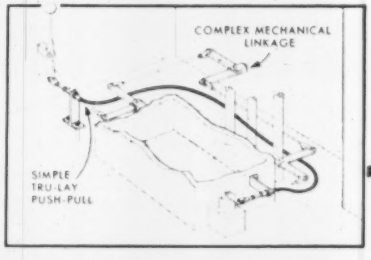
Simplicity vs Complexity

Compare the TRU-LAY PUSH-PULL cable in illustration with the mechanical linkage. PUSH-PULLS are simple, have but one moving part, are noiseless and give lifetime service accuracy. Linkages are complex, made of many parts; they wear at many points. Their use brings increased backlash, lost accuracy and vibration rattles.



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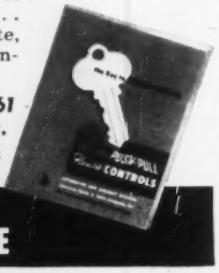

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Obituaries

George A. De Luca, 63, president and co-founder of a heavy construction firm that bears his name in Akron, Ohio. His firm built many miles of sewers in Akron and neighboring towns.

Frank A. Nikirk, 77, of Berkeley, Calif., a noted civil engineer. He was a research associate with the University of California. A 1904 Stanford graduate, Professor Nikirk early in his career served as city engineer for the cities of Los Gatos, San Jose, and San Leandro. He spent a number of years as a private construction engineer and in 1950 was appointed visiting professor of civil engineering at UC to develop a construction engineering course. In 1953 he retired but continued to do research work on the campus.

Thomas F. Grady, 69, superintendent for the Kiely Construction Co. of Butte, Mont.

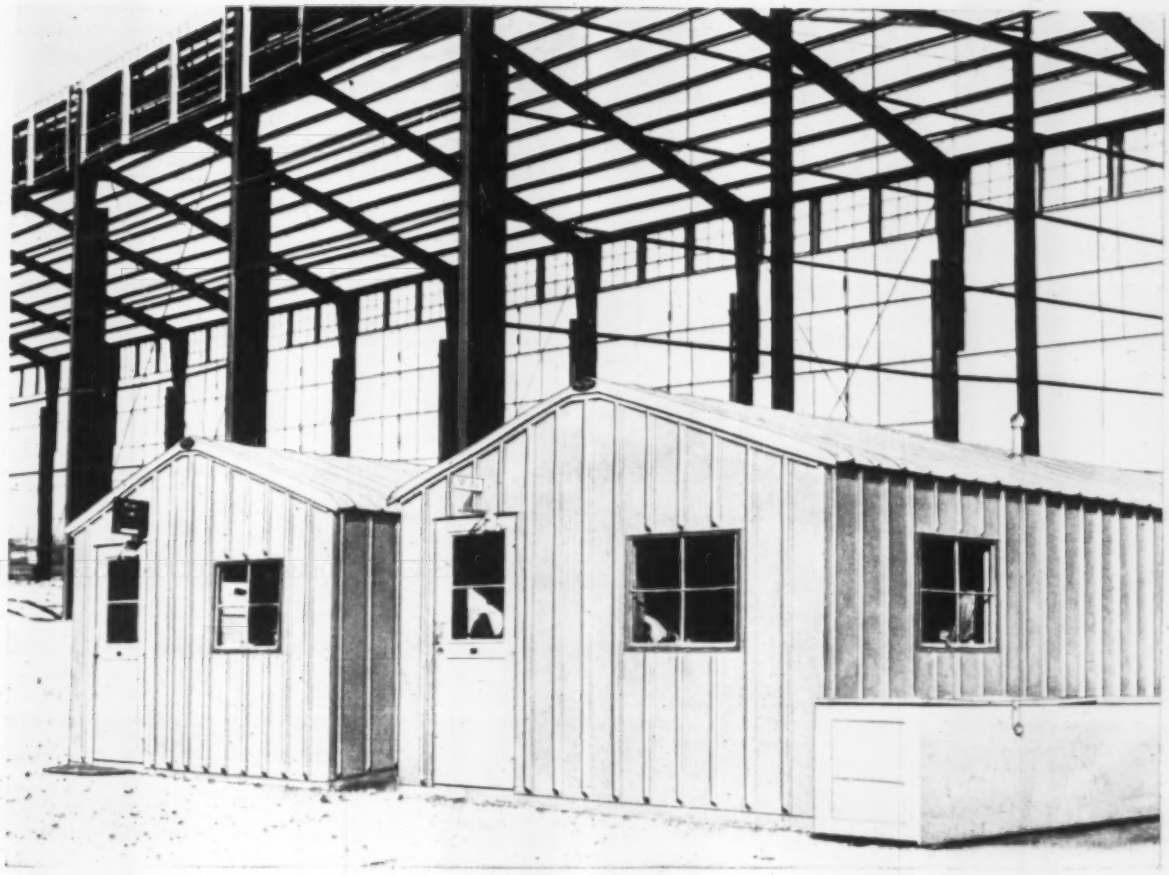
Joseph I. McNichol, 65, president of the McNichol Paving & Construction Co., Philadelphia. A 1916 graduate of the University of Pennsylvania, he supervised many of the municipal paving contracts for Philadelphia.

John M. Hagan, 69, Suffolk District engineer for the Virginia Department of Highways. He joined the department in 1919 as a construction inspector and was appointed to his last post in 1937. He was a graduate of Virginia Military Institute and served as a first lieutenant in World War I.

Kenton C. Vail, 59, engineer and materials testing expert of Denver. As an employee of the City and County of Denver he founded the engineering department's materials laboratory. He established a similar laboratory for the Colorado Highway Department, for which he worked for 12 years. He left state service to found Laboratories, Inc. and, later, Laboratory Engineers, which made chemical tests of materials for contractors. He went to Turkey in 1952 as a materials engineer for the U. S. Bureau of Public Roads.

John J. Ganser, 75, retired general contractor in the Milwaukee area. He was chairman of the West Allis Board of Appeals from 1939 to 1958.

Thomas L. Carnes, 63, sales manager for the Arundel Corp., of Baltimore. Before joining Arundel in 1938, he worked for the U. S. Treasury Department, the Maryland State Roads Commission and the Pennsylvania Railroad.



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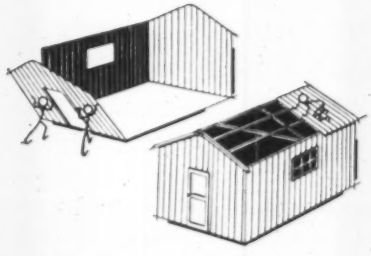

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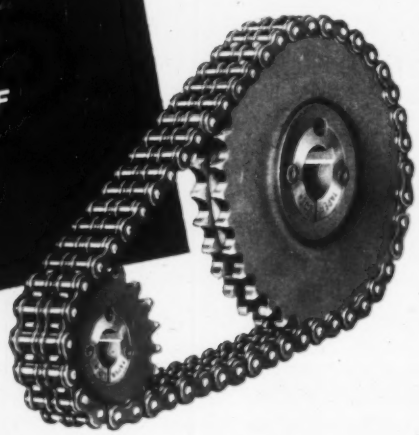

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Rolled Beam Bridge Pulls Six Bids

This $94,479 contract to Della Bitta-Bassola, Inc., Milldale, Conn., is for a rolled beam bridge and approaches on Route #10 in Southington, Conn., to replace worn out, narrow Durham bridge.

Connecticut State Highway Dept. made the award on a low bid 3.7% below the second and 5% below the third of six bids. Newman E. Argraves, Hartford, is state highway commissioner.

Square span of bridge is 30 ft, clear height, 10.6 ft, roadway width, 40 ft curb-to-curb, with a 5-ft sidewalk on east side of bridge.

The job includes 1,750 ft of 24-ft-wide, 2½-in.-deep bituminous concrete pavement.

Class A concrete accounts for 22% of the total contract. Contract price on this item was $44 a cu yd. Low price on this concrete was $39 a cu yd, quoted by the third low bidder for the contract.

Work includes catch basins, a temporary crossing, macadam pavement and removal of superstructure.

The contractor furnishes all materials.

Rail and truck transportation is available. The railroad is three miles from the project.

The three low bids for this bridge job include:

1C Della Bitta-Bassola, Inc., Milldale, Conn	$87,479
2 Joseph Faitella, Plainville, Conn	101,247
3 Charter Oak Construction Co., Inc., Hartford	102,617

Bids: 1-5-59 Items	Unit	Quantity	Unit Prices 1C	2
Maintain & protect traffic	ls	job	$2,000	$4,000
Clear & grub	ls	job	500 00	500 00
Excavation, earth	cy	3,250	0 50	0 50
struct, compl	cy	1,275	5 00	5 00
Existing masonry, remove	cy	7	10 00	10 00
Concrete pavement, remove	sy	4,115	0 85	1 00
Excavation, trench, 0-6'	cy	545	1 25	1 25
6-10'	cy	60	2 00	2 00
ditch	cy	150	1 50	2 00
Borrow	cy	4,703	0 60	0 60
RC pipe, 15"	lf	576	3 00	3 00
18"	lf	460	3 50	3 50
24"	lf	84	6 00	5 50
ACCM pipe, 15"	lf	32	4 50	3 50
Catch basin, type C	ea	9	200 00	200 00
Steel sheet piles	lb	70,000	0 10	0 10
Concrete, class A	cy	480	44 00	44 00
for steps & coping	cy	2	60 00	60 00
Bit jt filler, ½" premoulded, for bridges	sf	180	0 75	0 75
Steel bars, deformed	lb	34,000	0 12	0 12
structural	lb	33,500	0 15	0 15
Dampproof	sy	265	0 75	0 75
Temporary crossing	ls	job	4,000	5,000
Superstructure, remove	ls	job	1,000	1,000
Bridge rail, metal	lf	75	8 00	8 00
Gravel fill	cy	180	2 00	1 25
Backfill, previous structure	cy	750	0 85	1 00
Subbase	cy	2,150	1 00	1 10
Subgrade, formation	sy	9,200	0 10	0 10
Broken stone for base	t	985	2 75	3 00
bit mac base	t	890	3 00	3 25
bit mac pave	t	750	3 50	3 50
Rolled gravel base	cy	820	1 50	1 25
Bit conc binder course	t	350	7 50	7 50
Asphalt concrete, hot	t	425	7 50	7 50
Service bridge	ea	2	50 00	50 00
Dust contr, calc chloride	t	5	50 00	50 00
water	Mgal	50	10 00	5 00
Shape & clean slopes	lf	2,039	0 45	0 75
Bit concrete lip curb	lf	3,650	0 75	0 50
matl, bit mac pave	gal	22,000	0 16	0 17
Concrete sidewalk	sf	200	0 75	0 75
Paved ditch	sy	25	3 00	5 00
Guide railing, 2 cable	lf	1,000	1 50	1 60
Anchorage, type B	ea	4	40 00	45 00
compensating type	ea	10	35 00	40 00
Single post	ea	25	7 00	7 15
Riprap	t	150	3 00	3 00
Loam, furnish & place	sy	1,000	0 50	0 30

Completion schedule: 150 calendar days
Liquidated damages: $40 day

Ohio Water Supply Line Uses Cast Iron Pipe

This $118,158-contract to Contractors Service Co., Cincinnati, for a water supply line in Springfield, Hamilton County, Ohio, includes 10,715 lin ft of 12-in. and 270 lin ft of 6-in. cast iron pipe at $7.75 and $3.90 a lin ft, respectively.

The Board of Commissioners for Hamilton County made the award on a low bid 21.5% under the engineer's estimate but only 2% below the second bid. George M. Lemmel, Cincinnati, is sanitary engineer.

The work includes two bridge, one creek and one railroad crossing.

A minimum pipe cover of 42 in. is specified. Cast iron pipe is Class C or 250.

The contractor supplies all materials. The railroad is half a mile from the site.

Prevailing wages include: trench excavator operator $3.60; tractor operator $3.375; crane and shovel operator $3.60; common laborer $2.525.

The three bids included:

1C Contractors Service Co., Cincinnati	$118,158
2 Jurgensen Co., Newton, Ohio	120,837
3 Bond & Sheehan, Cincinnati	132,886
EE Geo. M. Lemmel, Sanitary Engineer, Cincinnati	150,498

Bids: 12-30-58 Items	Unit	Quantity	Unit Prices 1C	2
Cast iron pipe, cl C, 6"	lf	270	$3.90	$4.00
12"	lf	10,715	7.75	7.81
castings, cl D	t	7.992	490.00	600.00
Reinf conc pipe, 15"	lf	40	3.50	5.00
18"	lf	80	3.50	6.00
24"	lf	40	3.50	7.00
Gate valv & chambers, 12"	ea	24	345.00	350.00
& box, 6"	ea	27	85.00	75.00
Conn to existing water main	ea	1	100.00	100.00
Gravel for drives	t	70	2.50	3.00
3-way fire hydrant	ea	27	250.00	210.00
Bank run gravel	t	1,000	1.25	0.50
Conc drive, 6" restore	sy	30	5.00	7.00
Macadam pavement, 12" restore	sy	100	4.50	3.25
drive, 8" restore	sy	150	4.25	2.85
Crossing, bridge 35+22	ea	1	4,000	5,000
112+62	ea	1	1,500	2,500
creek, 69+05	ea	1	2,500	3,450
railroad, 108+27	ea	1	1,500	1,500

Completion schedule: 90 days

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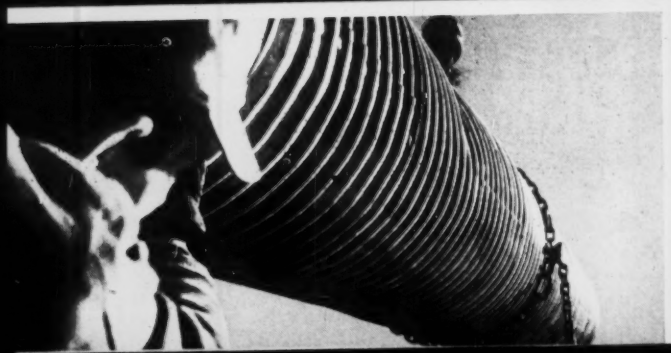

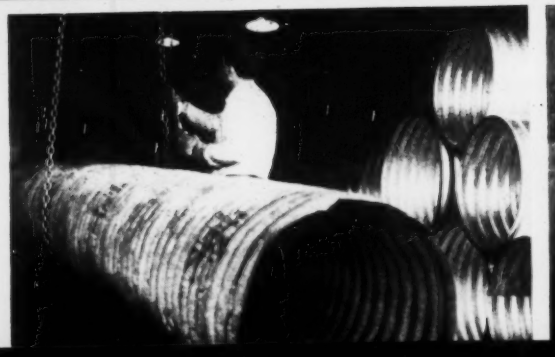

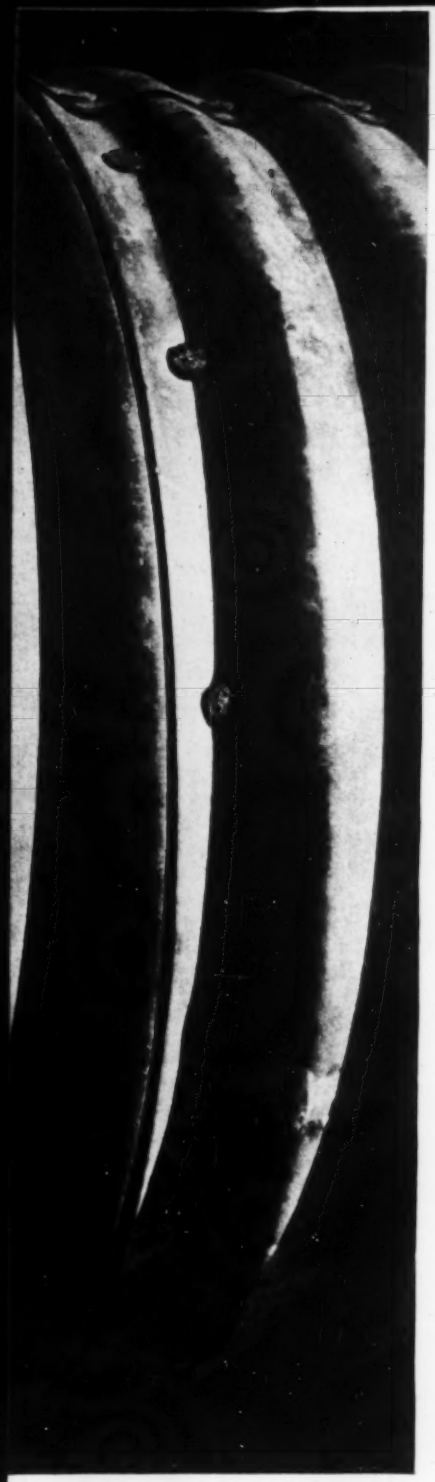

This metal culvert pipe was buried for 40 years!

"LIKE BRINGING up a time capsule," the foreman said. "This culvert pipe was buried under a road in Pottawattamie County, Iowa, and we dug it up this year (1958) when we moved the road. The pipe was in excellent condition—could be used again."

The stencil on the corrugated metal was perfectly legible. U. S. Steel checked the heat number stenciled on the metal and found that the steel was made in 1918! The pipe was fabricated by the Nebraska and Iowa Steel Tank Company, now known as the Eaton Metal Products Corp. The culvert sheets were made by the American Sheet and Tin Plate Company, then a subsidiary and now part of U. S. Steel.

The pipe is two feet in diameter and 16 feet long. The steel was not corroded because the corrugated metal was protected by a coat of zinc. It wasn't crushed or cracked because corrugated metal pipe is *flexible*—it deflects under load and gains support from the compressed soil around it. This is why only corrugated metal pipe can stand the crushing weight of deep fill *and* the vibration and impact of heavy loads over shallow fill.

Write for our free book, "USS Culvert Sheets." It tells how to select correct structure sizes and offers suggestions on how to install the pipe. Write United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

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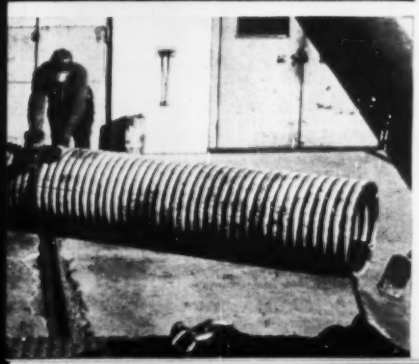

USS

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Warehouse Distributors
United States Steel Export Company

United States Steel

Materials and Labor Prices

Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Feb. 19; Next, Mar. 19
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Feb. 26; Next, Mar. 26
- Wage Rates, Building Board Lath, Insulation: Last, Feb. 26; Next, Mar. 26
- Cement, Aggregate, Ready-Mixed Concrete, Asphalt: Last, Mar. 5; Next, Apr. 2

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.50	$5.30	$5.675	$12.25	.....	$110.50	$130.00	$6.975	$9.75	$6.60	.....
Chicago Area	5.50	5.30	5.675	12.25	$6.50	110.50	130.00	6.975	9.75	6.60	.....
Pittsburgh Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	$14.75
Buffalo Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	14.75
Cleveland	.....	.....	5.675	12.25	6.50	.....	.....	.....	.....	.....	14.75
Youngstown Area	.....	.....	5.675	.....	.....	.....	.....	.....	9.75	.....	.....
Geneva	5.50	5.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	6.20	.....	6.375	.....	6.50	.....	.....	.....	9.75	6.75	.....
Pueblo	.....	.....	.....	.....	.....	.....	.....	89.75	9.75	6.60	.....

* Fairless Works, $5.575.

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	STRUCTURAL SHAPES Extras, New York:	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	REINFORCING BARS Extras, New York:	EXPANDED METAL LATH‡ Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	EXPANDED METAL LATH‡ Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq. ft., carload lots fob mill
Atlanta	$9.40		8.75	$8.25		$56.00	$60.00	
Baltimore	9.675		8.70T			42.00	46.50	
Birmingham	9.00tu		8.99ty	8.99ty		59.00p K	76.00p K	
Boston	10.01K		8.75t	8.75t		49.50 K	54.00 K	
Chicago	9.15n		7.16gu	7.16gu		52.00‡U	63.00‡U	
Cincinnati	9.56akt		9.04‡	....		44.50 Kq	49.00mn Kq	
Cleveland	9.30at		7.14ct	....		47.50 KL	52.00 KL	
Dallas	10.40M		9.00	9.00		44.00c	48.50c	
Denver	10.16c K		9.25c	....		57.00n	63.00n	
Detroit	9.56		7.18g	....		55.00O	63.00O	
Kansas City	9.82s		8.10N	....		49.00	60.00	
Los Angeles	8.90dkt		7.35fr	....		57.00r	63.00r	
Minneapolis	.....		9.26T	9.26T		44.50 K	49.00 K	
Montreal	7.90–8.60C/8.20–8.90A		7.00‡7.50FG	7.00/7.50FG		65.70A	70.20A	
New Orleans	.....		8.00gktz	....		48.50 K	53.50 K	
New York	9.84‡s		8.60ty	8.60y		52.00n	59.00ne	
Philadelphia	8.85/9.65‡tM		8.93/9.83‡t	....		46/48‡	48/52‡	
Pittsburgh	9.00y		7.35y	....		48.00‡rw	52.00‡rw	
St. Louis	9.48stz		7.75‡trQ	7.75‡trQ		61.00ecz K	62.00ecz K	
San Francisco	9.95aS		9.00S	....		52.00S	56.00S	
Seattle	10.20aD		8.85DM	....		67.00‡nD	73.50‡nD	
Toronto	9.20H		7.85	7.85		46.00pqJ	49.00pqJ	

Quantity extras, per cwt: under 100#, +$10.100-399#, +$7; 400-999#, +4.00; 1000-1999#, +1.25; 2000-4999#, base price; 5000-9999#, −25c; 10,000-19,999#, −50c; 20,000-29,999#, −75c; 30,000# and up, −1.25

EXTRAS, per cwt—‡Quantity (applies to L/CL shipments only): under 1,000#, +$1.80; 1000–1999#, +$1.50; 2000–4999#, +$1.20; 5000–9999#, +90c; 10,000–19,999#, +60c; 20,000–29,999#, +30c; 30,000–39,999#, +10c; 40,000# & up, 0. §+45c per #2, #3, #4, +$2.50; #3 +$1.40; #4 +$1.00; #5 +70c; 90c, light #9, #10, #11 +50c. ¶Bending: New York City and surrounding metropolitan area where bending must be done on the job). ◊Engineering details and planning from dealers (or others): over 500 tons, +45c; 200–499 tons, +50c but not over $4500; 75–199 tons, +65c but not over $2000; 20–74 tons, +75c but not over $975; 5–19 tons, +85c but not over $500; under 5 tons, +$1.00 but not over $85. Min. charge $25. Design only: +60c.

*‡ Delivered. **Aver. of Canadian & American. *a 2000–9999# *b 10,000–15,999#, fob city *c 20 tons or over *d 10,000–29,999# *e Intermediate struct'l *f Incl. delivery in free zone *g CL *h list price; dominion tax exempt; add provincial and municipal taxes *i add dominion, provincial and municipal sales taxes *j intermediate and hard grade *k fob city *l delivered; contractor to do unloading *m copper alloy *n LCL *o asphalt coated *p 500 sq. yd. or more. *q 2.5 lb *r less 2% disc. for cash *s 2,000–4,999# *t less ½% disc. 10 days *u add 7.5c switch *v incl 15c del. *w truck lots. *x add 2% sales tax *y add 15c del. *z add 10c del. *A American made. *C Canadian made. *D ½% for cash. *E 30,000# or over. *F Federal tax exempt for bidgs. *G add 10c del. *H 8.85 without tariff charges. *I 3 lb $60.00. *J 3 lb $66.00. *K less 2% disc. 10 days *L F.o.b. Youngstown plant *M 5,000–9,999# *N 2,000–19,999# *O 100 sy lots *Q 5 tons *R: revised *S less 2% disc. 10th *T less ½% dics, 10th of mo. *U less 2% dics 10 days

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEXa	ASBESTOS CEMENT PIPE Z per lin. ft. 6" Press Cl. 150	ASBESTOS CEMENT PIPE Z per lin. ft. 12" Sew Cl. 1500	CLAY SEWER PIPE Per ft., delivered, car load ASTM C13-54 8 in.	ASTM C13-54 12 in.	ASTM C200-55T 24 in.	ASTM C200-55T 36 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTM C4-55 6 in.	ASTM C4-55 8 in.	CONCRETE SEWER PIPE‡ Per ft., delivered ASTMC 14-55 12 in.	ASTMC 14-55 24 in.
Atlanta	130.5	$1.61/1.69	$2.36/2.48	$0.55	$1.00	$4.50	$12.50	$209.00e	$334.00	$0.92m K	$3.68m K
Baltimore	140.1	1.61/1.69	2.19/2.30	665	1.28	5.08	12.71	187.80	289.20	1.01	2.75
Birmingham	125.8	1.61/1.69	2.26/2.37	48r	90r	3.88rw	10.80rw	273.00r	462.00r	1.25rR	2.75rR
Boston	143.1	1.63/1.71	2.19/2.30	784qrtL	1.512qrtL	6.255qrtM		215.40r	330.60r	1.56	3.47
Chicago	140.9	1.61/1.69	2.19/2.30	93rm	1.78rm	7.52rm	21.16rm	220.00Br	330.00Br	1.30	4.00
Cincinnati	135.5	1.63/1.71	2.19/2.30	665rt	1.282Srt	4.905rt	12.505r	240.00r	3.70.00r	85cAB	3.25rAB
Cleveland	141.7	1.63/1.71	2.19/2.30	798BCN	1.485tBC	4.771BC	12.505tBC	155.40mBC	240.60mBC	1.35	3.60P
Dallas	137.8	1.63/1.71	2.26/2.37	550‡B	955‡B	4.406‡B	9.752‡B			1.25BD	2.75BD
Denver	148.2	1.71/1.80	2.36/2.48	52nr	96nr	3.93nr		460.00nr	580.00nr	1.05m	3.50m
Detroit	142.1	1.61/1.71	2.19/2.30	90mk	1.70mk	6.80mk	18.50mk	182.00mk	280.50mk	1.10k	4.05k
Kansas City	138.5	1.61/1.71	2.26/2.37	61r	1.105r	6.104br	16.50r	303.00r	581.00r	.95r	3.25r
Los Angeles	148.6	1.70/1.79	2.19/2.30	82bl	1.78blR	7.19lR	16.90blR	410.00lR	590.00lR	1.176rE	3.486rE
Minneapolis	149.9	1.67/1.75	2.26/2.37	93oB	1.67oB	7.36oB				2.19DFH	6.31DFH
Montreal				1.13u	2.00u	7.00u	13.50u	288.00	545.00	1.17D	3.11j
New Orleans	133.3	1.61/1.69	2.26/2.37	52Sr	0.983r	5.43r		210.50pr	468.00	1.41xl	3.70xl
New York	138.5	1.63/1.71	2.19/2.30	1.02	1.94	7.58	19.48			1.50‡B	3.60‡B
Philadelphia	137.8	1.61/1.69	2.19/2.30	68‡	1.31‡	5.13‡r	14.25‡r	300.00‡	350.00‡	1.75‡A	4.20‡A
Pittsburgh	142.9	1.63/1.71	2.19/2.30	602	1.16	8.14	22.71	190.00	295.00	1.66DB	3.93DB
St. Louis—O	136.9	1.61/1.69	2.26/2.37	62rO	1.15rO	4.92rO	12.68rOR	200.00rO	400.00rO	1.50tO	3.65O
San Francisco	148.6	1.70/1.79	2.19/2.30	86‡d	1.86‡d	7.53‡d	18.00‡d	360.00‡l	620.00‡l	1.05‡Q	3.30‡Q
Seattle	149.0	1.71/1.80	2.19/2.30	85bk	1.83bk	7.61k		250.00‡rk		1.95ky	4.75ky
Toronto				80F	1.50F	6.00F		157.00F	280.00F	.92F	3.21F

*† Extra quality *‡ Extra strength *‡ delivered. *a PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. *b Extra strength. *c 4-in., $130. *d SS361-A *f 21 in. *g culvert pipe; reinf., ASTM C 75-56 *h reinf., ASTM C 75-54 *i reinf., ASTM C 76-55 *j centrispun; no standard specs. in Canada. *k less 2% disc. for cash *l fob plant *m truck del. *n LCL del., fob truck *o less 5% disc. 10th *p freight allowed to destination in city *q 35,000# minimum *r less 2% disc. 10 days *s 1 ft lengths *t 3 ft lengths *u CSA A 60-1941 *v standard strength *w SS; add 20% for d.s. *x fob city *y Reinforced *z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered *A single strength *B truckload *C less 2% disc. 15th *D ASTM 76-57 *E less 1% disc. 10 days *F less 5% disc. 30 days *G LCL *H CL *I fob origin, freight allowed *J reinf. B14-15 *K Less 2% disc. 15 days *L ASTM 13-57 *M ASTM 200-57 *N 2 ft lengths, Trucklots *O add 2% Sales Tax *P 18 in. *Q less 1% disc. 10th *R ASTMC 72, 12" 1.55, 24" 4.00

*WROUGHT STEEL PIPE—(Full standard weight) Discount from list; see footnotes

Mill	2½ & 3 in. Butt Weld* Black %	2½ & 3 in. Butt Weld* Galv. %	3½ to 6 in. Lap Weld* Black %	3½ to 6 in. Lap Weld* Galv. %	2½ to 4 in. Butt Weld‡ Black %	2½ to 4 in. Butt Weld‡ Galv. %	4½ to 6 in. Lap Weld‡ Black %	4½ to 6 in. Lap Weld‡ Galv. %
Lorain, Ohio	13.75	+3.50	3.25a	+11.00a	13.75	+3.50	+2.50	+13.50b
Aliquippa, Pa	13.75	+3.50	.....	.....	13.75	+3.50	+2.50	+13.50b
Sparrows Pt., Md	17.25	list†	.....	.....	17.25	list†	+4.50	+14.50a
Benwood, W. Va	13.75	+3.50	3.25	+14.50a	13.75	+3.50	+2.50	+13.50b
Youngstown, O	13.75	+3.50	2.25ab	+15.50a	13.75	+3.50	+2.50	+13.50b
Indiana Harbor, Ind.	12.75	+4.50	.....	.....	12.75	+4.50	+4.50	+14.50a
Sharon, Pa	.....	.....	3.25a	+14.50a	13.75	+3.50	+2.50	+13.50b
Wheatland, Pa	.....	.....	3.25a	+14.50a	13.75	+3.50	+2.50	+13.50b
Etna, Pa	.....	.....	.....	50de	13.75	+3.50	+2.50	+13.50b
Fontana, Calif	.....	.....	0.75	+16.50b	+9.75ab	+27.50ab	+9.75ab	+27.50ab

* Threaded and coupled. a 3½ to 4 in. b Continuous weld. c 5 and 6 in. d 6 in. e Stainless
† Effective 12/1/58

*** WROUGHT STEEL PIPE:** Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft.("based on approx. $200 per net ton): Butt Weld ⅛ in., 8½¢; ¼ in., 8¢; ⅜ in., 8¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 78½¢. Lap Weld 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. continuous weld same as lap weld prices. Add freight, 3% transport tax for destination price. † Production discontinued November 1957

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld—1 in. black, + 68.54, galv., + 95.77; 1¼ in. black, + 65.54, galv. + 95.23, 1½ in. black, + 61.78 galv. + 91.22; Lap Weld —2½ in. to 3 in. black + 67.95 galv. + 98.77; 4½ in. to 6 in. black + 64.74 galv. + 90.68 Add freight rates plus 3% transportation tax to get destination price.

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Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Wayland**—SCHOOL—BA 3/27—Town, Senior High School. $2,300,000. Plans deposit $75. The Architects Collaborative, 63 Brattle St., Cambridge, archts. CD 4/16.

BUILDINGS—LB & CA

▲ **Columbia Constr. Co.**, 11 Hanover St., Malden, Mass., LB $1,257,000, HOSPITAL addn., alterations, Locust St., NORTHAMPTON, MASS. Cooley, Dickinson Hospital, 30 Locust St., Northampton, Mass. Bids Feb. 27. CD 2/2.

▲ **Brick & Concrete Constr. Corp.**, 501 High St., Dedham, Mass., LB $1,229,000, SENIOR HIGH SCHOOL, SCITUATE, MASS. Town of Scituate, School & P. Bldg. Comn., Cudworth Rd., Scituate Center, Mass. Bids Feb. 25. CD 1/30.

▲ **Ames Constr. Co.**, 15 Standish St., Hartford, Conn., CA $1,550,000, Pulaski JUNIOR HIGH SCHOOL, NEW BRITAIN, CONN. Town, School Bldg. Comn., 27 Hillside Place, New Britain, Conn. Bids Feb. 17, awarded Feb. 26. CD 2/20.

▲ **Alan E. Hanbury Builders, Inc.**, Forest Drive, Newington, Conn.; Owner Builds, $1,320,000, 132 HOUSES, "Belden Acres," NEWINGTON, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **D. C., Wash.**—BA 3/27—Dpt. Highways, D. C. Govt., 499 Pa. Ave. N.W., channel piers Washington Channel Bridge. Plans deposit $50. CD 9/5.

BUILDINGS—BA

▲ **N. Y., Brooklyn**—HOUSING—BA 3/19—New York City Housing Auth., 299 Broadway, New York, Zone 7, foundations and general constr., heating and ventilating, electrical and plumbing work Samuel J. Tilden Houses, Proj. No. NY-5-34, in area bounded by Dumont, Stone, Livonia and Rockaway Aves., Brooklyn Boro. Plans deposit $75. CD 7/10.

▲ **Md., Baltimore**—TEMPLE, etc.—BA 3/26—Temple Oheb Shalon, 1307 Eutaw Pl., temple, sanctuary, auditorium, social center, school and administration bldg. $2,250,000. Plans deposit $75. Dr. Walter Gropius, 63 Brattle St., Cambridge, Mass., and Leavitt & Assoc., 4400 Colley Ave., Norfolk, Va., archts. CD 1/6.

▲ **N. J., Camden**—SCHOOL OF NURSING and CONVENT—BA 4/7—Our Lady of Lourdes, 1600 Haddon Ave., School for Nursing and Convent. $1,600,000. Extended date. Priudy & Henderson Assoc., Inc., 1 Madison Ave., New York, N. Y., engr. Paul C. Reilly, 111 5th Ave., New York, N. Y., archt. CD 2/12.

BUILDINGS—SLC

▲ **N. J., Dover**—HOSPITAL—Dover General Hospital, Jardine St.; soon lets contract. 152-bed hospital addn. $2,000,000. Edward A. Berg, 235 Riverside Dr., archt. CD 12/30, under Public Buildings.

▲ **Pa., Phila.**—RADVIN INSTITUTE—University of Pennsylvania, 3025 Walnut St., soon lets contract. I. S. Radvin Institute (research, surgery section) $3,500,000. Schmidt, Garden & Erikson, 104 S. Michigan Ave., Chicago, Ill., archts.-engrs. CD 2/3.

HEAVY CONSTRUCTION—LB & CA

▲ **Westinghouse Air Brake Co.**, 350 Fifth Ave., New York 1, N. Y., LB $3,037,578 (2 bidders), furnishing, installing block signaling and interlocking equip. for rehabilitation of Lexington Avenue Line IRT Division, north of 42nd St. to north of 86th St., Contr. No. S-102, Manhattan Boro, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Feb. 27. CD 1/13.

▲† **Isaac Degenaars**, 231 Greenwood Ave., Midland Park, N. J., LB $1,384,905, 3 buildings, 4 shops, Dover Air Force Base, No. 36-109-59-27, DOVER, DEL.; U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Feb. 25. CD 1/23.

▲ **MARYLAND**—State Rds. Comm., 108 E. Lexington St., Baltimore, Zone 2.
Wright Constr. Co., Odenton, Md., CA $2,162,590, grading, drainage, surf., 7.461 mi. Rte. 70, incl. ramps and connecting roads from Tonoloway Creek to near Millstone, W. 463 3.15-623, Washington Co. Bids Jan. 13. CD 1/22, under LB.

BUILDINGS—LB & CA

▲ **Turner Constr. Co.**, 150 E. 42nd St., New York 17, N. Y., CA Est. $10,000,000, 18 story, 260,000 ft. UNITED ENGINEERING CENTER, United Nations Plaz., E. 47th and 48th Sts., NEW YORK, N. Y. United Engineering Trustees, Inc., 33 W. 39th St., New York, N. Y. Shreve, Lamb & Harmon, 101 Park Ave., New York, N. Y., archts. Seelye, Stevenson, Value & Knecht, 415 Lexington Ave., New York, N. Y., structural engrs. Jaros, Baum & Bolles, 101 Park Ave., New York, N. Y., mechanical engrs. CD 8/19/57.

▲ **Robin Hill Homes**, c/o Lorenzo D. Bement, 392 Sunrise Hy., Islip, N. Y., Owner Builds, $1,300,000 (addnl. section), 100 HOUSES, Vanderbilt Parkway and Washington Ave., NORTH BRENTWOOD, N. Y.

▲† **U. S. Eng.**, 111 E. 16 St., New York 3, N. Y., cancelled bids to have been opened Feb. 26, 130 unit Capehart permanent family HOUSING, 3rd Increment, ENG-30-075-59-130, FORT MONMOUTH, N. J. $1,500,000-$2,000,000. CD 1/30.

▲ **Bomar Builders & Developers**, 235 Midland Ave., Garfield, N. J., owner Builds, $1,200,000, 32 HOUSES, Jacksonville Rd., LINCOLN PARK, N. J. Lester Cohen, 234 Clinton Place, Hackensack, N. J., archt.

▲† **U. S. Eng.**, 111 E. 16th St., New York 3, N. Y., cancelled bids to have been opened Feb. 27, 120 unit Capehart FAMILY HOUSING, Seneca Ordnance Depot, ENG-30-075-59-114, ROMULUS, N. Y. $2,000,000. Will re-advertise. CD 1/28.

▲ **Thomas E. Nora**, P. O. Box 265, New Brunswick, N. J., CA $1,500,000, 27 store SHOPPING CENTER and parking area, HADDONFIELD, N. J., Food Fair Properties 99 Park Ave., New York, N. Y. Bids Sept. 10. CD 10/20, under LB.

▲ **Cornell Development Co.**, Seidman and Gellman Sts., Riverton, N. J., Separate Contracts, $1,500,000, 110 unit RESIDENTIAL DEVELOPMENT White Horse Pike, LINDENWOLD, N. J. William Dean Faint, 1915 Browning Rd., Pennsauken, N. J., archt.

▲ **B. Bornstein & Son**, 2027 Arch St., Phila., Pa., LB $1,744,250, general constr. SENIOR HIGH SCHOOL, KING OF PRUSSIA, PA. Upper Merion Twp. School Auth., King of Prussia, Pa. Wigmore & Gifillan, 117 S. 17th St., Phila., Pa., archts.-engrs. CD 6/16.

▲ **McNichol Paving & Constr. Co.**, 52nd St. and Grays Ave., Phila., Pa., LB $1,219,000, general constr. Mantua Hall HOUSING Proj. (153 units) PHILA., PA. Phila. Pa. Housing Auth., 42 S. 15th St., Phila., Pa. David H. Moran, 117 S. 17th St., Phila., Pa., archt. Dorfman & Bloom, 1411 Walnut St., Phila., Pa., engrs. CD 6/10/56.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ **NORTH CAROLINA**—State Hy. Dpt., Raleigh.
W. L. Coston & Sons, 1st National Bank Bldg., Birmingham, Ala., CA $2,251,885, grading CABC, concrete paving 10.88 mi. Hy. Proj. 8.18123, Burke Co. Awarded Feb. 26. CD 2/6, under CA.

▲ **MISSISSIPPI**—State Hy. Dpt., Jackson.
Miss.—Bowyer & Johnson, Crook Bldg., Jackson, Tenn., CA $146,213, base, double bit. surf. 5.858 mi. Mississippi Hy. 19 between Zama and Winston-Neshoba County Line, F-026-1 (15) and F-026-1 (17), Attala and Counties; CA $168,518, base, double bit. surf. treatment 7.274 mi. Miss. Hy. 19 between Arlington and Winston County line, F-026-1, Neshoba Co.; CA $96,799, base, double bit. surf. treatment 10.044 mi. Hy. 27 between Georgetown and Crystal Springs, Proj. F-054-1(14), Copiah Co.;
Miss.—Mid-State Paving Co., Lamar Bldg., Meridian, Miss., CA $1,142,371, base, double bit. surf. 6.451 mi. Interstate Hy. 59 between Purvis and Lamar-Forrest Co. line, Proj. I-IG-092-1(12) (old) I-IG-59-1(11) 51 (new), Contr. I-IG-092-1 (14) (old) I-IG-59-1(13) 50 (new Contr. I), Forrest and Lamar Counties;
Miss.—Boyd Constr. Co., Grenada, Miss., CA $1,098,669, grade, drain, culverts, 5.566 mi. Interstate Hy. 55 between Grenada and Tillatoba, I-IG-091-3(8) (old), I-IG-55-3(8) 211 (new) Contr. I, Yalabusha Co.;
Miss.—Madison Land Improvement Co., 208 Monroe, Canton, Miss., CA $122,178, base and double bit. surf. 2.461 mi. Hy. 463 between Mannsdale and Livingston, S-0516 (4)A, Madison Co.;
Miss.—G. C. & Cobb Bros. Constr. Co., 315-33rd Ave. South, Meridian, Miss., CA $679,984, base, double bit. surf., bit. pavement 7.562 mi. US Hy. 45 and Miss. Rte. 39 between Meridian and DeKalb, U-002-3(6) F-025-2(7) and U-025-2 (8), Lauderdale Co.;
Miss.—A. A. Bush, Hy. 15 N, Laurel, Miss., CA $693,061, base and c. conc. 3.841 mi. Hy. No. 15 through Laurel, F-U-022-1 (1), Jones Co. Bids Feb. 24. Grand total $4,147,793. CD 2/16.

BUILDINGS—LB & CA

▲† **U. S. Eng.**, foot of Front St., Norfolk 1, Va., cancelled bids to have been opened about Feb. 26, 285 unit Capehart Family HOUSING, ENG-44-110-59-18, FORT LEE, VA. Est. $4,480,000. CD 1/28.

▲ **Southern Constr. Co.**, Box 1011, Lake Charles, La., CA Est. $3,200,000, 208,000 sq. ft. SHOPPING CENTER, incl. parking areas, Hy. No. 14 at Prien Lake Rd., LAKE CHARLES, LA. Lake Charles Shopping Center, c/o Fitch & Osbourne, archts., 419 Pioneer Bldg., Lake Charles, La.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ill., Moline**—BA 3/31—City, City Hall, Rock River Valley Sewerage Sys. Plans deposit $15; South Treatment Plant; Plans deposit $5, interceptor sanitary sewers; Plans deposit $10, trunk sanitary sewers. CD 2/28/58.

BUILDINGS—BA

▲ **O., Lorain**—HOSPITAL—BA 3/17—St. Joseph's Hospital, Broadway and 21st St., hospital addn. $1,600,000. Extended date. Garfield, Harris, Schaefer, Flynn & Williams, 1740 E. 12th St., Cleveland, Zone 14, archts. CD 1/27.

HEAVY CONSTRUCTION—LB & CA

▲ **INDIANA**—State Hy. Comm., State House Annex, Indianapolis, Zone 4. Bids opened 2/24.
Ind.—Ofinger Constr. Co., Huntingburg, Ind., LB $2,628,134, est. $2,926,712 (9 bidders), road Contr. R-4612, Clark and Scott Counties;
Ind.—J. A. Jones Constr., 209 W. 4 St., Charlotte, N. C., LB $2,715,729, est. $2,909,257 (11 bidders), road Contr. R-4614, Shelby Co.;
Ind.—Dyer-Loitz, Inc., Dyer Constr. Co., 1716 Sheffield St., Dyer, Ind., LB $1,923,525, est. $1,978,320 (4 bidders), road Contr. R-4620, Lake Co.;
Ind.—Moellering Constr., Engle Rd., Fort Wayne, Ind., LB $652,490, est. $710,882 (2 bidders), road Contr. R-4621, Howard Co. CD 2/6.

▲ **MICHIGAN**—State Hy. Dpt., Mason Bldg., Lansing. Bids opened 2/18.
Mich.—Holloway Constr. Co., Livonia, Mich., LB $3,249,657, 7.7 mi. dual 24 ft. wide concrete roadway, two interchanges and four grade separations from Calhoun-Jackson Co. line west to 28 Mile Rd. in Calhoun Co., which includes 29-Mile Rd.-grade separation to carry 29-Mile Rd. over Expressway; 0.5 mi. northeast of Albion 28 Mile Rd. north of Albion; 27 Mile Rd. 1 mi. northwest of Albion; 26 Mile Rd. 2.2 mi. northwest of Albion; 24 Mile Rd. 6 mi. east of Marshall;
Mich.—L. A. Davidson, 213 E. St. Joseph, Lansing, Mich., LB $1,625,000, 3.2 mi. dual 24 ft. concrete roadway, two dual grade separations and diamond interchange on section from west side of Kalamazoo River west to Main St. south of Battle Creek in Calhoun Co., which includes 9 Mile Rd. 2 mi. southeast Battle Creek; Beadle Lake Rd. 1.5 mi. south of Battle Creek; Main St. 2.1 mi. south of Battle Creek;
Mich.—Pierson Contg. Co., 200 Eddy Bldg., Saginaw, Mich., LB $2,070,771, 3.8 mi. dual 24 ft. concrete roadway, 3 grade separations, partial interchange, bridge on section from Carmody Rd. west to Main St. east of Benton Harbor, in Berrien Co., section to

PROJECTS COVERED
By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — Middle West
Middle Atlantic — West of Mississippi
South — Far West
PROPOSED WORK
Water Supply — Public Buildings
Sewers, Waste Disposal — Mass Housing
Bridges — Commercial Buildings
Streets & Roads — Industrial Buildings
Earthwork, Waterways — Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

connect with 13.8 mi. stretch of expressway now under constr. from Kennedy Rd. south of Hartford west to Carmody Rd., continuous concrete T-beam grade separation onto carry Roslyn Rd. over expressway 3.3 mi. southwest of Coloma; rein.-con., steel grade separation to carry Benton Center Rd. over expressway 3 mi. east of Benton Harbor, partial interchange to carry Main St. over expressway 2.3 mi. east of Benton Harbor and to provide ramps to connect east and westbound Main St. traffic to east and westbound expressway routes;

Mich.—Louis Garavaglia, Center Line, Mich., LB $1,582,881, 1.5 mi. grading, drainage work and lighting facilities Edsel Ford Expressway from Kingsville Ave. to Vernier Rd. in Cities Detroit, Harper Woods and Grosse Pointe Woods, Wayne Co. CD 1/28.

BUILDINGS—LB & CA

▲ **Murphy Bros., Inc.**, 7945 Hamilton Ave., Cincinnati, O., (Own Forces, Approx. $2,362,500 (first section), 135 HOMES, Plainfield and Glendale-Milford Rd., CINCINNATI, O. Ayers & Graff, Linton St., Cincinnati, O., engrs. CD 2/19.

▲ **Pathman Constr. Co.**, 1735 W. Fullerton St., Chicago, Ill., LB $2,429,000 (11 bidders) general work for State Hospital for Mentally Retarded, CHICAGO, ILL. Illinois Div. Architecture, Armory Bldg., Springfield, Ill. Bids Feb. 25. CD 1/30;
P. Nacey Co., 927 S. State St., Chicago, Ill., LB $724,000 (8 bidders) heating, refrigeration contract for State Hospital for Mentally Retarded (Chicago, Ill.).

▲† **J. W. Bateson Constr. Co.**, 6800 Monroe Dr., Dallas, Tex., CA $10,010,300, 618 unit Capehart HOUSING, Wurtsmith Air Force Base, OSCODA, MICH. Base Procurement Office, Wurtsmith Air Force Base, Oscoda, Mich. Bids Feb. 5. CD 2/19, under LB.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲† **Neb., Lincoln**—RUNWAY, etc.—BA 3/19—U.S. Eng., 1709 Jackson St., Omaha Zone 2, runway and apron paving, Lincoln Air Force Base, ENG. 25-066-59-93. $1,000,000-$1,500,000. CD 1/21, under LB.

BUILDINGS—SLC

▲ **Colo., Westminster**—SHOPPING CENTER—Dunton Realty Co., Westminster Plaza Co., Midland Savings Bldg., Denver, soon lets contract 1 story, 250,000 sq. ft. shopping center, incl. parking. $4,500,000. Jared B. Morse, 827 Sherman St., Denver, archts. CD 2/25.

HEAVY CONSTRUCTION—LB & CA

▲† **Ben M. Hogan & Co.**, 110 Fairview, Little Rock, Ark., CA $1,313,077, apron, Little Rock Air Force Base, ENG-03-050-59-30, LITTLE ROCK, ARK. U. S. Eng., P. O. Box 867, Little Rock, Ark. Bids Feb. 3. CD 2/6, under LB.

▲ **Mitchell Darby Constr. Co.**, P. O. Box 160, McAllen, Tex., LB $2,115,980, est. $2,250,000, 33 mi. 30 in. concrete cylinder pipe line from Martin Co. Well Field to Odessa, near BIG SPRING, TEX. Colorado River Municipal Water Dist., c/o E. V. Spence, mgr., Big Spring, Tex. Bids Feb. 26. CD 2/3.

▲† **H. B. Zachry Co., Constr. Div.**, Box 10188, San Antonio, Tex., CA $1,480,048, runways and aprons paving, R.W. primary, Biggs Air Force Base, ENG-29-005-59-68, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Feb. 19. CD 1/21.

▲ **NEW MEXICO**—At office L. D. Wilson, ch. hy. engr., State Hy. Comn., State Hy. Bldg., Cerrillos Rd., Santa Fe,
N. M.—**Allison & Haney, Inc.**, P. O. Box 1507, Albuquerque, N. M., CA $2,318,236, est. $2,440,630, 2.5 mi. West Gallup, West. Proj. No. I-040-1 819, McKinley Co.; CA $574,051, est. $610,728, Second St. in Raton, Proj. No. F-001-6(4), Colfax Co.; CA $941,925, est. $795,335, Sandia Loop, Proj. No. S-131(6)7, Bernalillo Co. Bids Feb. 27, awarded Feb. 27.
N. M.—**Armstrong Constr. Co., Inc.**, P. O. Box 873, Roswell, N. M., CA $521,182, est. $659,449, Angus-Capitan, Proj. No. S-1227(1), Lincoln Co.;
N. M.—**James P. Johnson**, 421 Calleita Place, Santa Fe, N. M., CA $185,679, est. $192,742, NM-18 W. towards Bueyeros, Proj. No. S-1340(2), Union Co.;
N. M.—**Daniels Constr. Co.**, 1412 Broadway N. E., Albuquerque, N. M., CA $180,148, est. $210,150, Fort Sumner-Vaughn vicinity, Proj. No. S. P. 2-59-1(6), Torrance, Guadalupe and De Baca Counties. Grand total $4,721,221. CD 2/18.

▲† **Mittry Constr. Co.**, 2960 Marsh St., Los Angeles, Calif., CA $8,542,100, embankment and spillway at Abiquiu Dam and Reservoir near Espanola, Inv. No. CIVENG-29-005-59-8, NEW MEXICO, U. S. Eng., P. O. Box 1538, Albuquerque, N. M. Bids Feb. 12. CD 2/17, under LB.

BUILDINGS—LB & CA

▲ **B. D. Simon Constr. Co.**, 209 S. 5th St., Columbia, Mo., CA $1,523,834, general contracts 4 story and ground floor LIBRARY addn. on Campus of University, COLUMBIA, MO. Curators University of Missouri, 116 Jesse Hall, Columbia, Mo. Bids Feb. 5. CD 2/13, under LB.

▲† **Centex Inc.**, 4606 Greenville Ave., Dallas, Tex., CA $6,730,311 (Second Increment), 414 unit Capehart HOUSING, Forbes Air Forces Base, TOPEKA, KAN. Topeka Air Force Dept., Topeka Air Force Station, Topeka, Kan. Bids Feb. 12. CD 1/9.

▲ **Humble Oil & Refining Co.**, 1216 Main St., Houston, Tex., did not award contract for GAS PROCESSING PLANT, 15 mi. S. W. outside Kleberg Co. line, KINGSVILLE, TEX. $1,500,000. Correction (status), CD-3-2, under CA.

▲† **Glasgow Assocs.**, 2570 South Harvard St., Tulsa, Okla., CA $7,460,957, 460 family Capehart HOUSING UNITS, Glasgow Air Force Base, GLASGOW, MONT. Base Procurement Office, Glasgow Air Force Base, Glasgow, Mont. Bids Jan. 28. CD 2/9, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Alaska, Anchorage**—BA 3/24—Chugach Electric Assn., 8 Ave. and Gambell St., 2,000,000 lb. 51- to 84-in. steel penstock Cooper Lake Hydro Project. Plans deposit $25. North Pacific Consultants, 220 S.W. Alder St., Portland, Ore., engrs. CD 5/28.

▲ **Calif., Santa Ana**—BA 3/25—Orange County Sanitation Dist. No. 3, 1104 W. 8th St., Miller-Holder Trunk Sewer, Contr. 3-3, consisting 27,810 ft. plastic lined rein.-con. pipe. $1,900,000. CD 8/15.

HEAVY CONSTRUCTION—BA

▲ **Calif., San Francisco**—CLASSROOM BLDG. and ART CENTER—BA 3/25—City and San Francisco Co., 135 Van Ness Ave., classroom bldg. and art center at City College, $2,000,000. Milton T. Pflueger, 580 Market St., archt. CD 7/15.

▲† **Calif., Lemoore**—HOUSING—BA 4/14—Dist. Pub. Wks. Office, 12th Naval Dist., San Bruno, 800 units, Capehart Housing, Naval Air Station, Richard J. Neutra, Robert E. Alexander, Donald Francis Haines, 341 Market St., San Francisco, archts. CD 9/17.

HEAVY CONSTRUCTION—LB & CA

▲ **IDAHO**—State Hy. Dept., Boise. Bids opened 2/24,
Cherf Bros., Inc., & Sandkay Contractors, Inc., P. O. Box 918, Ephrata, Wash., LB $3,094,467, 4-lane divided roadway, drainage structures, plant mix bit. surf., 4 concrete underpasses on 4.955 mi. Interstate No. 90 Coeur d'Alene Belt Line, 0.425 mi. U.S. 10, 0.082 mi. U.S. 95, Kootenai Co. CD 2/10.

▲† **Baldwin-Lima-Hamilton Corp. Eddystone Division**, Phila. National Bank Bldg., Phila., Pa., LB $1,410,000 (2 bidders) one 115,000-hp. vertical-shaft, hydraulic turbine for Unit N-8 Hoover powerplant, Boulder Canyon Project, DS-5136, ARIZONA. Bureau Reclamation, Dept. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Feb. 24. CD 12/31.

▲† **Gordon H. Ball Co.**, Box 278, 300 Camille Ave., Danville, Calif., CA $1,790,100 exten. Runway 12-L-31-R, Naval Air Station, NBy 18217, FALLON, NEV. Dist. P. Wks. Office, 12th Naval Dist., Room C112, San Bruno, Calif. Bids Feb. 11. CD 2/18, under LB.

▲† **General Electric Co.**, River Rd., Schenectady, N. Y., CA $6,033,737, 3 generators for Ice Harbor Dam on Snake River, CIVENG-45-164-59-14, WASHINGTON, U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Jan. 27. CD 1/30, under LB.

▲ **Valley Constr. Co.**, 7708 Rainier Ave., Seattle, Wash., and **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho, CA $7,504,693, 24.12 mi. 54- to 66-in. modified prestressed concrete cylinder pipe line from Tolt River reservoir to city, SEATTLE, WASH. City, County-City Bldg., Seattle 4, Wash. Bids Feb. 18, awarded Feb. 25. CD 2/25, under LB.

▲ **Winston Bros. Co. & Greene Constr. Co.**, 1632 California Ave., Monrovia, Calif., CA $7,583,866, enlargement Matheas Dam and dike, near Riverside, Spec. 505, LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern California, 306 W. 3rd St., Los Angeles, Calif. Bids Feb. 4. CD 2/9, under LB.

▲ **Steve P. Rados**, 112 W. Maple Ave., Monrovia, Calif., LB $1,547,860 (13 bidders), Miller-Holder Trunk Sewer, Huntington Beach, Contr. No. 4-2, SANTA ANA, CALIF. Orange County Sanitation Dist. No. 3, 1104 W. 8th St., Santa Ana, Calif. Bids Feb. 25. CD 2/5.

BUILDINGS—LB & CA

▲ **Chemical & Industrial Corp.**, 256 McCullough St., Cincinnati, O., CA Est. $2,000,000, NITRIC ACID PLANT and AMMONIUM NITRATE PLANT, KENNEWICK, WASH. California Spray Chemical Co., Richmond, Calif.

▲† **Hal B. Hayes & Assocs.**, 1235 Sierra Alta Way, Los Angeles, Calif., CA $6,478,777, 400 unit Capehart HOUSING, Increment No. 2, BEALE AIR FORCE BASE, CALIF. Base Procurement Office, Beale Air Force Base, Calif. Bids Feb. 10. CD 2/13, under LB.

▲ **Pereira, Pulte & Warnick**, 279 Brannon St., San Francisco, Calif., LB $2,086,300, Base Bid (1) LB $2,331,000, Base Bid (2), (11 bidders), 6 story 122,000 sq. ft. rein.-con. EARTH SCIENCES BLDG., University of California Campus, BERKELEY, CALIF. Bd. Regents, University of California, Admin. Bldg., Berkeley, Calif. Bids Feb. 25. CD 7/9.

▲ **Brown Boveri Corp.**, Baden, Switzerland, LB $9,260,800, two 200,000 kw GENERATORS for Haynes Steam Plant, Los Alamitos, LOS ANGELES, CALIF. Los Angeles Water & Power Dept., 311 S. Spring St., Los Angeles, Calif. CD 11/20/58.

CANADA

BUILDINGS—SLC

▲ **B. C., Castlegar**—PULP MILL, etc.—Celgar Ltd., 1030 W. Georgia, Vancouver, soon lets contract eight 30 x 240 ft. think houses, 30 x 200 ft. staff house, 90 x 150 ft. cafeteria, 30 x 50 ft. recreation hall, Celgar pulp mill, H. A. Simons Ltd., 16 E. Hastings, Vancouver, engrs. etc.

▲ **Que., Baie Comeau**—WAREHOUSES—Cargill Grain Ltd., 209 Grain Exchange Bldg., Winnipeg, Man., soon lets contract concrete superstructures, Warehouse No. 1 and 10 storage bins, Warehouse No. 2 and four bins,

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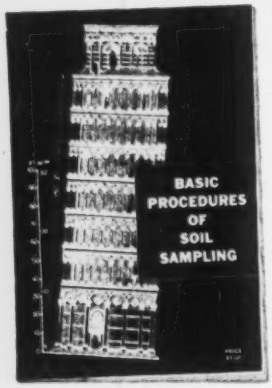

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BUILDINGS—LB & CA

▲ Perini Ltd., 150 Kent St., Ottawa, Ont., CA $2,835,000, 2 story, 2 wings NATIONAL RESEARCH COUNCIL COMMUNICATIONS BLDG., OTTAWA, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Awarded Feb. 25. CD 1/28, under LB.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ Morocco—Bids Asked—Hydraulic & Electricity Div., Ministry of P. Wks., Rabat, dam on Moulouya River, Mechra-Ellia. Contractors who wish to bid must prequalify by March 16.

HEAVY CONSTRUCTION—LB & CA

▲‡ Raymond International, Inc., 140 Cedar St., New York, N. Y., U. S. A., and Richard Costain, Ltd., London, England, CA Est. $24,500,000, 6 mi. breakwater on Excraves River, NIGERIA, AFRICA. Govt. of Nigeria, Lagos, Africa. Coode & Partners, London, England, engrs.

PROPOSED PROJECTS

WATER SUPPLY

▲ Tenn., Nashville—City, City Hall, water treatment plant expansion and pumping facilities, mains from plant to main reservoir and addnl. facilities and imprvs. $6,015,000. Chester Engineers, 601 Suismon St., Pittsburgh, Pa., consult. engrs. CD 10/6/48.

SEWERS, WASTE DISPOSAL

▲ Mich., Detroit—City, City Hall, voted $30,000,000 bonds Feb. 16, storm sewers incl. 2½ mi. Mack Ave. $4,700,000; 3½ mi. Schoolcraft St. $6,300,000; 5 mi. West End $15,500,000, connecting arms which stretch 4 mi. $3,000,000. CD 12/16.

▲ N. J., Middlebush—Sewerage Auth. Franklin Twp., Middlebush Rd., trunk sewers, laterals and interceptors in Eastern portion of Twp. $1,880,000. Bowe Albertson & Assocs., 75 West St., New York, N. Y., consult. engrs. CD 2/24.

▲ N. C., Mt. Airy—City, City Hall, bond election Mar. 21, sewage treatment plant, lines. $1,600,000. J. N. Pease & Co., Inc., 1194½ E. 5 St., Charlotte, consult. engr. CD 8/5.

▲ O., Lakewood—City, City Hall, 14532 Lake Ave., Zone 7, 2-mill levy to be voted May 5 to finance sewage plant expansion and imprvs. $2,500,000.

▲ O., Xenia—Comrs., Green Co., Court House, sanitary sewer dist. to serve Beaver Creek Twp. $2,000,000. Ralph L. Woolpert Co., 360 W. 1st St., consult. engr. Fred Lemke, c/o owner, co. engr. CD 6/27.

BRIDGES

▲ BRITISH COLUMBIA—B. C. Govt., Parliament Bldgs., Victoria,

Port Mann—high-level, four lane, stiffened tied arch cantilever superstructure bridge over Fraser River, span 1,200 ft., side spans 360 ft., approaches 4,950 ft., height of span from deck to HW 146 ft. $20,000,000. C.B.A. Engineering Co. Ltd., 4545 Main St., Vancouver, archts.-consult. engrs. CD 11/4/46.

STREETS AND ROADS

▲ Minn., Minneapolis—Hennepin Co. and City, widen and pave Sixty-Second St. from Xerxes Ave. South to Twelfth Ave. S., north of 58th St. and on 58th St. to 66th Ave. South, 4-lane with cloverleaf and bridges. $10,000,000.

AIRPORTS

▲ Wash., Everett — BOMARC PILOTLESS-AIRCRAFT — U. S. Eng., 1519 S. Alaskan Way, Seattle. Zone 4. Bomarc pilotless-aircraft support facilities at Paine Air Force Base, near here. $6,000,000. Work to begin in Spring.

AMERICANS ABROAD

▲‡ Pakistan—Govt. of Pakistan, Karachi, single-track railroad bridge over Indus River between Rohri and Sukkur, 200 mi. northeast of Karachi. West Pakistan incl. steel arch with 810 ft. span. Karachi. $2,500,000. D. B. Steinman, Consulting Engineers, 117 Liberty St., New York 6, N. Y., U. S. A., consult. engrs.

PUBLIC BUILDINGS

▲ Ala., Anniston—HOSPITAL—Bd. Trustees, Anniston Memorial Hospital plans by James Hoffman, 1825 Henry Rd., and Sherlock, Smith & Adams, 303 Washington Ave., Montgomery, 93 bed hospital addn. $1,660,000. CD 10/13.

▲‡ Ala., Huntsville—MANUFACTURING FACILITIES—U. S. Eng., 2301 Grant St., Mobile. liquid fuel manufacturing facilities for rocket propulsion. $3,000,000-$5,000,000. Division of Union Carbide & Carbon Chemicals Corp., 30 E. 42 St., New York 17, N. Y., will operate. CD 9/11.

▲ Calif., Los Banos—SCHOOL—Los Banos High School Dist., P.O. Box 472, bond election May 19, school. $1,600,000. CD 3/6.

▲ Calif., La Puente—SCHOOLS—Rowland Union School Dist., 736 N. Grand View Lane, voted $1,900,000 bonds Feb. 17, schools.

(Continued on page 72)

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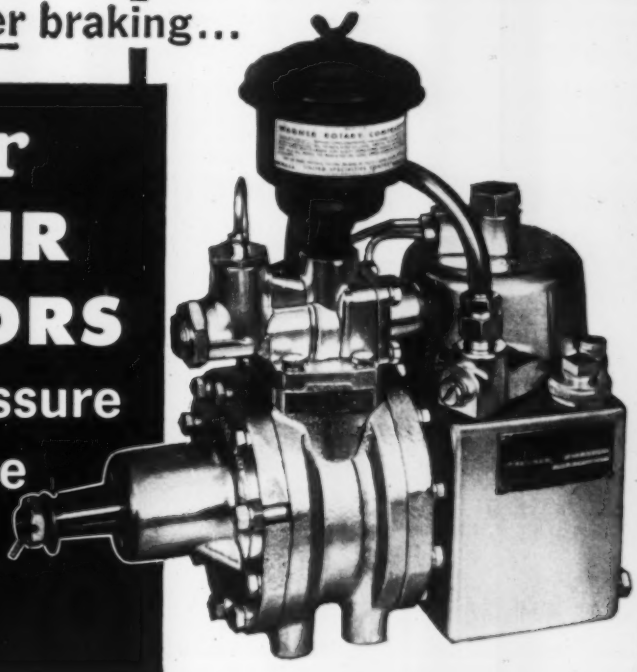

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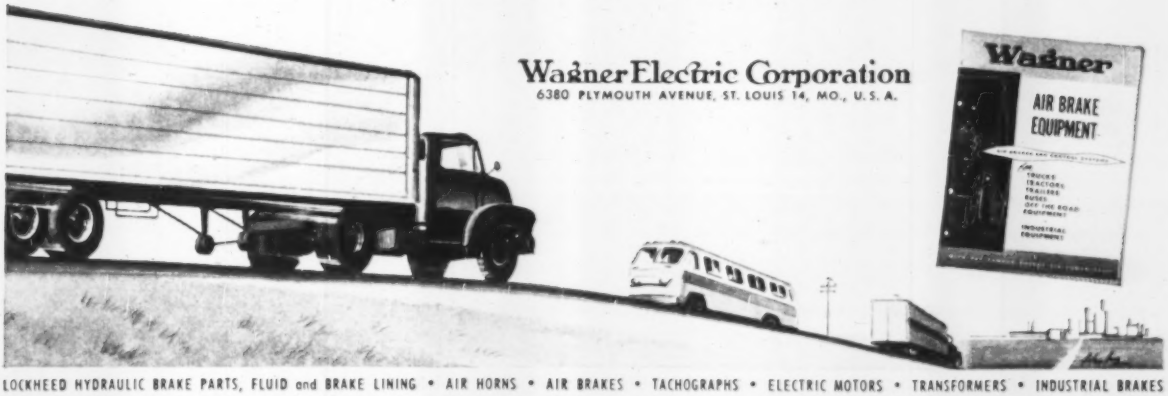

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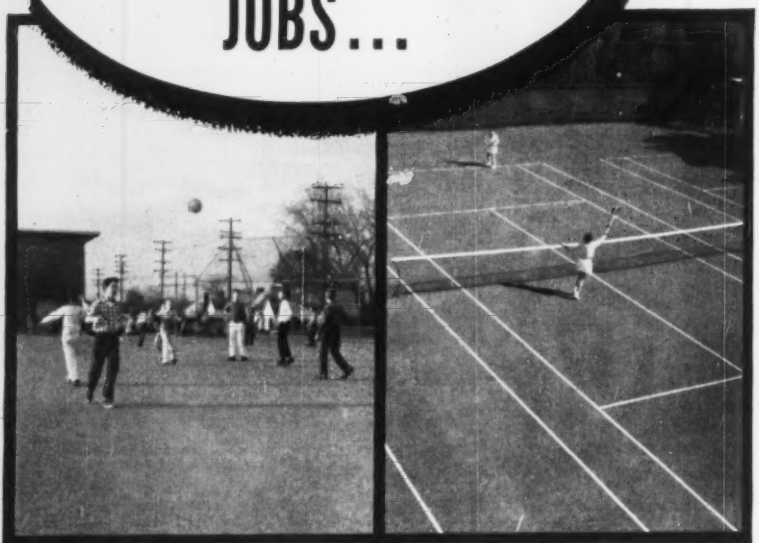

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Inglewood, Calif.
San Juan 23, P. R.

(Continued from page 70)

▲ Calif., Oakland—MUSEUM—City, City Hall, $5,950,000 bond election May 19; museum. Skidmore, Owings & Merrill, 1 Montgomery St., San Francisco, archts. CD 1/27/47.

▲ Calif., Pacific Grove—SCHOOL—Pacific Grove Unified School Dist., 716 Lighthouse Ave., voted bonds Feb. 10, high school and elementary school. $1,580,000. John A. Taras, P.O. Box 116, Monterey, archt. CD 11/3.

▲ Calif., Sacramento — COURTHOUSE — Dpt. P. Wks., Sacramento County Admin. Bld., 827 7th St., county courthouse. $5,564,915.

▲ Calif., Sacramento—JUVENILE HALL, etc.—Dpt. P. Wks., Sacramento County Admin. Bldg., 827 7th St., juvenile hall and juvenile probation office. $2,032,000.

▲ Calif., Sacramento—WELFARE—Dpt. P. Wks., Sacramento County Admin. Bldg., 827 7th St., welfare bldg. $1,789,780.

▲ Calif., San Jose—HOSPITAL—San Jose Hospital, 14th and E. Santa Clara Sts., San Jose Hospital alterations, remodeling. $2,612,222.

▲ Calif., San Juan Capistrano—SCHOOL—Capistrano Union School Dist., 31422 State Hy., defeated $2,000,000 bonds Feb. 17, schools. CD 12/19.

▲ Ill., DeKalb—CLASSROOM, etc.—Illinois State Teachers College, State Office Bldg., Springfield, plans by Perkins & Will, 309 W. Jackson Blvd., Chicago, Zone 6, classroom bldg., $1,025,000, CD 1/9/56; plans by Graham Anderson Probst & White, Inc., 201 N. Wells St., Chicago, science bldg., $2,750,000; plans by Lundeen & Hellfinger, 602 Corn Belt Bank Bldg., Bloomington, administration bldg., $700,000; plans by Gilbert A. Johnson, American National Bank Bldg., Rockford, Swen Parson Library addn. $825,000.

▲† Md., Bethesda—HOSPITAL—Dist. P. Wks. Office, Potomac River Command, Naval Gun Factory, Wash., D. C., plans by Kiff, Colean, Voss & Souder at office York & Sawyer, 101 Park Ave., New York, N. Y., hospital addn., alterations, National Naval Medical Center. $7,788,000. (No appropriation). CD 9/8.

▲ Mass., Easthampton — SCHOOL — Town, c/o Bldg. Comm., Park St., plans by Ralph M. Sizer, 12 Elm St., Westfield, high school, East and Ferry Sts. $1,500,000. Gordon E. MacNeill Assoc., 66 Main St., Lakeville, engrs. CD 7/24.

▲ Mich., Lansing—UTILITY OFFICES, etc.—City Bd. Water & Light, City Hall, plans by Kenneth Black Assocs., 706 Capitol Savings & Loan Bldg., 10 story utility offices and circuit courts. $3,000,000.

▲† Mich., Marquette—HOUSING—Base Procurement Office, K. I. Sawyer Airport, plans by McGaughan & Johnson, 2000 P N.W., Wash., D. C., 360 unit dwellings, K. I. Sawyer Airport. $5,800,000. General Engineering Assocs., 810 18th N.W., Wash., D. C., engrs. CD 9/29.

▲ Minn., South St. Paul—SCHOOL—Bd. Educ., $1,950,000 bond election Apr. 7, high school addn., $1,260,000, and Washington Elementary School addn., $425,000. Toltz, King, Duvall, Anderson & Assocs., 1408 Pioneer Bldg., St. Paul, archts. CD 5/8.

▲ Pa., Ardmore—SCHOOLS—Lower Merion Twp. School Bd., Ardmore, Junior High School, Villanova. $2,500,000. CD 11/5/54; elementary school Villanova, $1,500,000.

▲ Pa., Phila.—CITY HALL—Dpt. Procurement, City Hall, plans by V. G. Kling, 917 Corinthian Ave., city hall annex. $15,000,000. McCormick-Taylor Assocs., Suburban Station Bldg., Pittsburgh, consult. engrs. CD 11/7.

▲ Utah, Ogden—SCHOOLS—Ogden City Bd. Educ., 2351 Grant Ave., voted $2,750,000 bonds Feb. 17, schools. CD 1/5.

▲ Ont., Toronto—FACULTY OFFICES, etc.—University of Toronto, Simcoe Hall, plans by Page & Steele, 72 St. Clair Ave. W., Phase 1, civil engineer, engineer drawing, aeronautical engineering, faculty offices, classrooms and laboratories, St. George St., north of College St. $2,500,000. Bids soon.

COMMERCIAL BUILDINGS

▲ Conn., Waterbury—SHOPPING CENTER—Colonial Plaza Corp., 323 Main St., Paterson, N. J., shopping center, West Main St. $1,500,000.

▲ Ind., Indianapolis—APARTMENT—G. S. Waddell & Assoc., 3025 N. Meridian St., 6 story, 30 unit cooperative apartment, 5935 Spring Mill Rd., $2,000,000.

▲ Mass., Braintree—RECREATION CENTER—Braintree Sports Center, c/o Joseph A. Scavizzo & Co., 914 Washington St., plans by Hanlon & Donahue, 961 Hancock St., Quincy, recreation center, Rte. 128 and Southeast Expressway, off Pond St. $4,000,000. CD 12/29.

▲ N. J., Princeton—DORMITORIES, etc.—Princeton University, plans by Sherwood, Mills & Smith, 65 Broad St., Stamford, Conn., 5 dormitories, social facilities bldg. $5,000,000. Werner, Jensen & Korst, 641 Summer St., Stamford, Conn., engrs. CD 4/1/58.

▲ N. Y., Cheektowaga—HOMES—Glen Estates Corp., 350 homes, 17 acre tract. $4,500,000. Herthe & Sonnenberger, 60 Niagara St., Buffalo, engrs. Constr. early summer.

▲ N. Y., Glenmont—SEMINARY—Roman Catholic Diocese of Albany, plans by Urbohn, Brayton, Burrows, 654 Madison Ave., New York, N. Y., seminary. $3,000,000. James F. Summers, 90 State St., Albany, N. Y., consult. engrs.

▲ N. Y., New York—APARTMENTS—75 East End Ave. Housing Enterprises, Inc., 22 W. 48th St., Zone 19, plans by Sylvan Bien, 342 Madison Ave., Zone 17, apartments 61-75 East End Ave., 601 E. 82nd St. and 602 E. 83rd St. $2,250,000.

▲ O., Akron—HOSPITAL—St. Thomas Hospital, 444 N. Main St.; 185 bed hospital addn. $3,500,000.

▲ O., Dayton—HOSPITAL—Good Samaritan Hospital, 1425 W. Fairview; 1961-1965 program; hospital addn.; boiler house. $1,500,000.

▲ O., Dayton—HOSPITAL—St. Elizabeth Hospital, 49 Hopeland; 1961-1965 program; hospital addn.; alterations; nursing school addn. $2,325,000. CD 2/4/57.

▲ O., Dayton—HOMES—Siebenthaler Constr. Co., 124 Wisteria Dr.; 150 brick prefabricated Rodenbeck Homes, Wilmington Heights. $2,000,000.

▲ R. I., Providence—POST OFFICE, etc.—Intelex Systems Inc., Div. International Telephone & Telegraph Co., No. 22 Thames St., New York, N. Y.; Post Office and Mail Processing Bldg., West River Industrial Park. $4,000,000. Post Office Department, Boston, Mass., lessee. Charles A. Maguire & Assoc., Turks Head Bldg., engrs.

▲ Utah, Salt Lake City—SHOPPING CENTER—Alan E. Brockbank, 2260 Country Club Circle, plans by William L. Pereira & Assoc.; Union Oil Center, 1231 W. 5th St., Los Angeles 17, Calif., Valley Fair Shopping Center, 1st stage—shopping center, department store $4,900,000; 2nd stage—stores $4,300,000; 3rd stage—6 story office, medical and dental center $4,000,000, 13th St. E. and 56th St.

▲ Utah, Salt Lake City—HOME SUBDIVISION—Mid-West Realty & Finance, Inc., Arch Coats, genl. mgr., 3530 W. 40th W., 180 home subdivision known as "Benview" Subdivision, 40th S. on north, 4530 on S. and 40th W. on the east. $2,500,000.

▲ Wis., Milwaukee—OFFICE, etc.—Marine National Exchange Bank, 625 N. Water St., Zone 2, plans by Victor Gruen Assocs., 135 S. Doheny Dr., Los Angeles, Calif., and Robert E. Rasche, 601 W. Capitol Dr., 25 story office and bank, 450-car parking pavilion. $15,000,000. CD 9/9 under Industrial Buildings.

▲ B. C., Burnaby—SHOPPING CENTRE—Webb & Knapp, 1030 Georgia St., Vancouver, plans by John Graham & Co., 1426 5th St., Seattle, Wash., U.S.A.; 400,000 sq. ft., 30 acre rein.-con., glass, concrete block shopping center, 2,500 car parking, NE corner Willingdon and Lougheed Sts. $10,000,000. R. J. Cave & Assocs., 1553 Robson, Vancouver, consult. engrs.

▲ Ont., Riverside—SHOPPING CENTRE—Murray Constr. (Windsor) Ltd., 3625 Wyandotte St., shopping centre, north side of Wyandotte St., east of Watson Ave. $1,500,000-$2,000,000.

▲ Ont., Riverside—HOTEL-MOTEL—George Vulcic, 7324 Riverside Dr., hotel motel, Riverside Dr. $2,500,000.

▲ Que., Montreal—OFFICE—Dorchester-Drummond Corp., c/o Barott, Marshall, Merrett & Barott, archts., 1425 Mountain St., 16 story office, Dorchester St. W., corner Drummond St. Over $1,000,000.

▲ Que., Three Rivers—COMMERCIAL CENTER, etc.—Principal Investments Ltd., 134 Richmond St. W., Toronto, Ont., commercial center, Ile St. Christophe, $1,200,000. CD 2/14/56; hotel, Ile St. Christophe, $3,000,000; housing development, Ile Ste. Joseph, $1,500,000.

INDUSTRIAL BUILDINGS

▲ Calif., Saugus—WIND TUNNEL—Lockheed Aircraft Corp., Calif. Div., 2627 N. Hollywood Blvd., Burbank, plans by William L. Pereira & Assocs., Union Oil Center, 1231 West Fifth St., Los Angeles, Zone 17, research center, with wind tunnel. $10,000,000. CD 12/11.

▲ Ill., East Moline—PLANT—Deere & Co., 1325 3rd Ave., Moline, malleable iron works plant addn. $2,800,000. Constr. in Spring.

▲ Mich., River Rouge—STRIP MILL—Great Lakes Steel Corp., Div. National Steel Corp., Ecorse, 80 in. strip mill. $100,000,000.

▲ Ore., Portland—PLANT—Pennsalt Chemicals Corp., 3 Penn Center Plaza, Phila., Pa., plant facilities expansion. $2,000,000.

▲ Pa., Phila.—COMMISSARY—Horn & Hardart Baking Co., 208 S. Warnock St., plans by Gantenbeine & McMullen, 99 Chauncey St., Boston, Mass., and Ralph B. Bencker, 1601 Chestnut St., Phila., commissary bldg., at Phila. Food Distr. Center. $6,500,000.

▲ S. C., Charleston—OIL REFINERY—Gulf Oil Corp., Gulf Bldg., Pittsburgh, Pa., oil refinery, Charleston Co. $2,000,000. Cummings & McCrady, Exchange St., consult. engrs. CD 6/27/51.

UNCLASSIFIED

▲ Calif., Oakland—PARKS, etc.—City, City Hall, bond election May 19; parks $2,880,000; recreation $2,835,000.

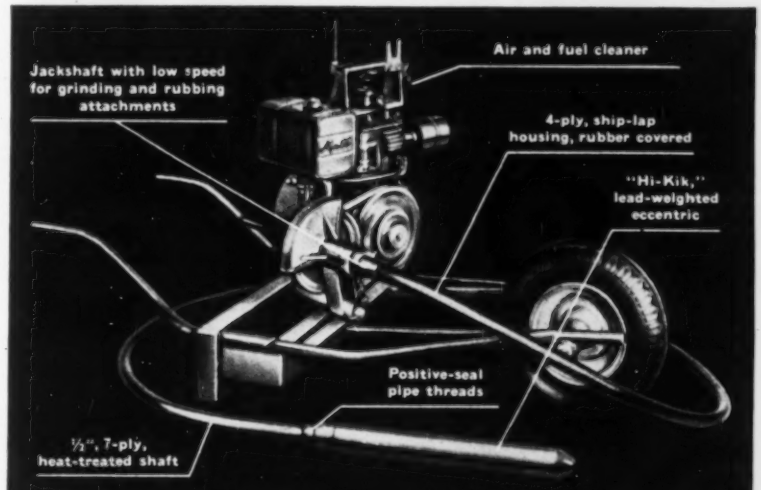
▲ Calif., Sacramento—COUNTY PARKS—Public Wks. Dpt., Sacramento County Admin. Bldg., 827 7th St., county parks. $1,620,000.

▲ Oklahoma and Kansas—CRUDE OIL and CONDENSATE PIPE LINE—Cameron Crude Oil Corp., 1205 S. Denver St., Tulsa, Okla.; 30 mi. crude oil and condensate pipe line from Harper Co., Okla. to Clark Co., Kan. $1,500,000.

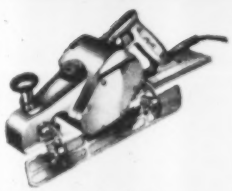
▲ Tennessee—LOOP LINE—Texas Gas Transmission Corp., 416 W. 3rd St., Owensboro, Ky.; 36 mi. 30 in. loop line from south of Kenton, Gibson Co., to Ky. state line. $39,600,000.

▲ Tex., Houston—UNDERGROUND TUNNELS—Texas Medical Center, 1133 M.D. Anderson Blvd.; 12 ft. deep underground tunnels to connect all bldgs. in Medical Center. $4,000,000.

POWER to boost job efficiency with REMINGTON tools

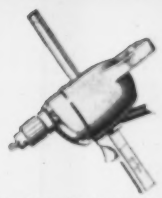

Jackshaft with low speed for grinding and rubbing attachments
Air and fuel cleaner
4-ply, ship-lap housing, rubber covered
"Hi-Kik," lead-weighted eccentric
Positive-seal pipe threads
½", 7-ply, heat-treated shaft

Concrete Vibrator, Model 7GVW—5-hp; speed: 7,500-10,000 vibrations per minute; rugged shaft, housing and big 20" vibrator head. From a complete line of air, electric or gasoline-driven vibrators with a wide range of head sizes.



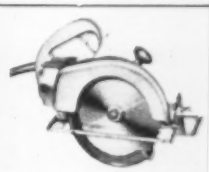
Planer, Model 3P—Sealed transmission and bearings; 3" width; depth adjustable, 0-⅛"; full-grip rear handle with trigger switch; 8.4 amp, AC-DC motor. Speed: 13,500 rpm.

Pneumatic Chain Saw, Model 2P—Heavy-duty, 18", 24" or 30" bar; roller bearing nose for fast cutting, longer bar life; automatic motor oiler; trigger throttle in hand grip.

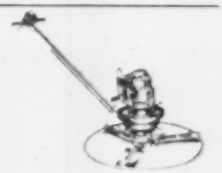


Electric Drill, Model 125—½" capacity; geared key-type chuck; 5-amp motor; removable auxiliary handle; ball and needle bearings; weight: 8½ lbs.; free speed 500 rpm.

Powerful, rugged, easy to handle—Remington Power Tools help you boost output and ease the tough jobs. They're precision-built for long service and minimum maintenance. Your Remington distributor stocks and services the industry's widest selection of power tools and parts.



Electric Saw, Model 106—10" blade; 13-amp motor with powerful worm drive; cuts full 3⅛" at 90°; complete with combination blade, wrench and steel carrying case.



Power Trowel, Model TG4-36—2¼-hp, 4-cycle, gasoline-powered engine; 36" ring size; automatic-recoil starter; centrifugal clutch disengages at idle; safety throttle control.

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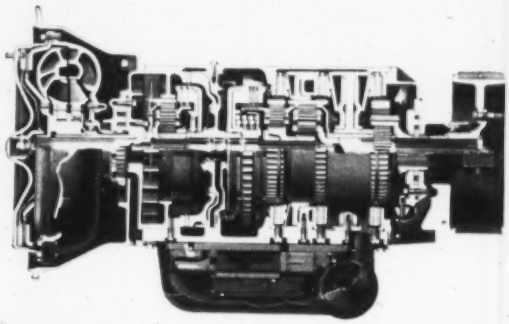
GMC OPERATION "HIGH

1 **50% more carrying capacity** with GMC's new Wide-Side pickup! And it's all *truck*—from the tread up! Longer-lasting wood body floor with steel skid strips, double-walled steel construction, heaviest front cross-member—the same used in bigger GMC's!

2 **Low-cost, dependable POWER** under every hood! You get a wide choice of high-torque, low-rpm engines—*truck* built for long, trouble-free performance! M-400 bearings with 7 times longer life plus over 40 *extra* quality features are standard on GMC Trucks.

WHATEVER the job, there's a GMC to do it! Now, from Operation "High Gear", comes the widest selection of cabs, engines, axles, transmissions, frames and wheelbases ever offered! Models from sturdy light-duty pickups to big 45-ton workhorses! They're all new, and all part of the greatest design and engineering program in truck history! Stop in at your GMC Dealer's today and see how new money-saving, money-making advances can pay off for *you!*

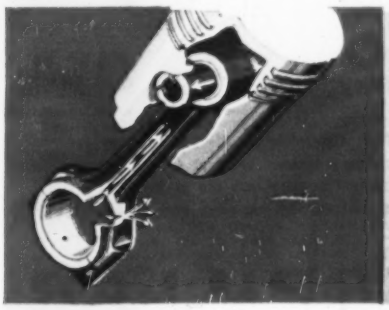


Start all loads smoother, faster with Torqmatic Drive! Output torque and speed are automatically adjusted to the load, thus preventing engine lugging and stalling. And because driveline shock is absorbed by hydraulic fluid, damage to driveline components is virtually eliminated. For maximum fuel economy, an automatic lockup clutch is provided.

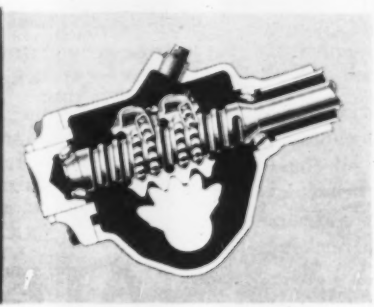
GEAR" offers you the biggest selection of truck chassis and components for construction work in the industry!

3 **Hauls over 16% more ready-mix** on every trip! Tailored to ready-mix needs, this GMC FW556 outhauls anything on the road . . . 7 full yards at a clip within a 46,400 lb. total! For example, on 1,000 cubic yard jobs it saves you up to 24 full trips!

4 **Up to 90,000 lbs. GCW!** For hauling big construction equipment and materials, GMC offers the widest selection of six-wheelers in the business! Plus the economical new GMC 6-71SE *two-cycle* diesel engine—and the best diesel service from coast to coast!



Rifle-drilled connecting rods greatly increase engine life! By rifle-drilling small oil leads through the connecting rods, oil pressure is delivered directly to the piston pins, resulting in less engine wear, greater economy!



Easier steering! All GMC trucks are equipped with recirculating ball type steering gear as *standard* equipment. Because rolling contact is maintained between all working surfaces, steering is smooth and easy!

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***PROJECT PAYDIRT** pays off for you again*

NEW Caterpillar No. 933 Series F Traxcavator delivers up to 22% more production

The new Caterpillar No. 933 Series F Traxcavator with a larger, 1⅛ cu. yd. bucket is ready now to set new production records. It is the latest achievement of Caterpillar's "Project Paydirt*."

Field tests on a variety of jobs and working conditions proved the new Series F delivers *up to 22 per cent more production* than previous models of this popular machine.

The power source of the new No. 933 is an efficient new 52 HP Cat Diesel Engine. It features a new cylinder block, engine balancer for smooth performance, unit-serviced fuel pump, and a side-mounted starting engine for compactness and economy.

A new transmission and a heavier final drive give the new No. 933 the speed and stamina to maintain quick, easy loading and faster cycling. Cycle time is further shortened by a high-speed reverse—3.67 MPH.

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And the new No. 933 retains the superior design features that have made Traxcavators first choice on jobs throughout the world. The exclusive oil clutch, automatic bucket controls, 40° tilt-back, heavy-duty undercarriage, unit design and construction — to name just a few. And the exclusive Side Dump Bucket is available to add versatility.

Get the complete story on the new No. 933 from your Caterpillar Dealer. Ask him to demonstrate how this Traxcavator can step up production on your job.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

HIGHER PRODUCTION and more profits are possible with the new Caterpillar No. 933 Series F Traxcavator featuring a 1⅛ cu. yd. bucket.

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

March 24 Massachusetts

BUILDINGS—BA

▲† Conn., New London—HOUSING—BA 3/18—Dist. P. Wks., Third Naval Dist., 90 Church St., New York, N. Y., 500 unit Capehart Housing, Submarine Base, Rte. 12, Groton. $9,000,000. Extended date. CD 1/20.

▲ Mass., Cambridge—SCHOOL—BA 3/20—R. C. Chancery Office, 1 Lake St., Brighton, Mass., girls' high school, Concord Ave., St. Peter's Parish. $2,500,000. John A. McPherson, 250 Huntington Ave., Boston, archt. CD 1/20.

HEAVY CONSTRUCTION—LB & CA

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston. Bids opened 3/3.

Mass.—M. A. Gamino Constr. Co., 728 Valley St., Providence, R. I., LB $4,549,558, est. $5,014,533; hy. and bridge, Interstate Rte. 95, 1-W-95-6(8), Chelmsford. CD 2/10.

Mass.—Central Constr. Co., Lawrence, Mass. and Henry Lundgren Co., 193 Hartford Pike, Shrewsbury, Mass., (joint venture), LB $2,031,537, est. $2,530,054; state hy. extension and bridge, FAP F-315(9), Chelmsford-Westford-Tyngsboro. CD 2/10.

▲ CONNECTICUT—State Hy. Comr., 170 Douglas St., Hartford. Bids opened 3/2.

White Oak Excavators, Inc., 61 East Main St., Plainville, Conn., LB $3,909,500 (11 bidders) 21,795 lin. ft. concrete pavement & bridge structures on Bradley Field Connector to Hartford-Springfield Expressway and 2,450 lin. ft. concrete pavement on relocation of section Rte. 20, Project 165-64 and 39-64 East Granby, Windsor Locks and Windsor. CD 2/11.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 20 Pennsylvania — April 2 New York

STREETS AND ROADS

March 20 Pennsylvania — March 24 New Jersey
April 2 New York

▲ NEW YORK—BA 3/31—Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York, Zone 35,

Throgs Neck Bridge Contr. No. TN-12C, Bronx Plaza Roadway and Cinder Storage Structure, Bronx Boro. Plans deposit $40, not refundable. CD 1/20/55.

BUILDINGS—BA

▲ N. J., Hoboken—HOUSING—BA 3/26—Housing Auth., City of Hoboken, Housing Project NJ 15-3, $3,000,000. Erwin Gerber, 11 Commerce St., Newark, archt. CD 12/16.

▲ N. Y., New York—HOUSES—BA 3/31—New York City Housing Auth., 299 Broadway, Zone A (1) fdns. and general contract (2) heating and ventilating (3) electric work (4) plumbing work, Base Bid A-reinf.-con. design, Base Bid B-structural steel design, Woodrow Wilson Houses, Proj. No. NYS-89, E. 106th St., Franklin D. Roosevelt Dr., E. 105th St. and 1st Ave., Manhattan Boro. $6,000,000. Plans deposit $75. CD 3/5.

▲ Del., Wilmington—APARTMENT—Bids Asked—Aaron Golish, archt., 117 S. 17 St., Phila., Pa., 168 unit apartment, 1800 N. Broom St., for Park Tower, Inc., c/o archt. $5,000,000. David Bloom, 1411 Walnut St., Phila., Pa., engr.

HEAVY CONSTRUCTION—LB & CA

▲ George N. Brewster & Co., Inc., 275 W. Fort Lee Rd., Bogota, N. J., LB $7,840,654 (8 bidders), Contr. GWB-190.024, approach roadway sys. for lower level expansion of George Washington Bridge between Hoyt-Ave. and Hudson River, Boro of Fort Lee, New Jersey, incl. utilities therefor, NEW YORK and NEW JERSEY, Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Feb. 3. CD 2/27.

BUILDINGS—LB & CA

▲ Diesel Constr. Co., 24 W. 58th St., New York 19, N. Y., CA Est. $11,000,000, 32 story Pfizer OFFICE, northwest corner E. 42nd St. and Second Ave., NEW YORK, N. Y. 235 E. 42nd St. Assocs., c/o Emery Roth & Sons, archts., 575 Madison Ave., New York 22, N. Y.

▲ Frouge Constr. Co., 680 Fifth Ave., New York 19, N. Y., CA $3,639,000, general contract TECHNOLOGY BLDG. at City College, NEW YORK, N. Y. Bd. Higher Educ., City College, Rm. 10, Brett Hall, 136th St. and Convent Ave., New York 31, N. Y. Grand total $5,593,000. Bids Jan. 30. CD 2/10, under LB;

H. Sands & Co., 11 Park Pl., New York 7, N. Y., CA $825,000, heating and ventilating for Technology Bldg. at City College (New York, N. Y.);

Nager Electric Co., 426 Broadway, Brooklyn 11, N. Y., CA $1,129,000, electrical work for Technology Bldg. at City College (New York, N. Y.).

▲ Mutual Housing Sponsors, Inc., 107-46 Queens Blvd., Forest Hills, N. Y., Separate Contracts, $3,500,000, 436 unit Justice Court COOPERATIVE APARTMENT, northeast corner 56 Ave. and 92nd St., REGO PARK, N. Y.

▲ Herbert Kendall & David Savage d/b/a Kendall Builders, Inc., P. O. Box 456, Franklin Park, N. J., Owner Builds, $9,500,000, 600 HOUSES, Rte. 27, Kendall Park, South Brunswick, FRANKLIN PARK, N. J. David Savage, Drakes Corner Rd., Princeton, N. J., archt. CD 4/25/56.

▲ W. C. and A. N. Miller Development Co., 4325 49th St. N.W., Wash., D. C., Owner Builds, $6,000,000, split-level SHOPPING CENTER, on 9-acre site, Sangamore Rd. and extension of Little Falls Branch Parkway, SUMNER, MD. E. R. Spano, c/o owner, archt.-engr.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 17 South Carolina

STREETS AND ROADS

March 17 South Carolina — March 20 Kentucky

HEAVY CONSTRUCTION—LB & CA

▲ SOUTH CAROLINA—State Hy. Dpt., Hotel Columbia, Columbia,

rejected bids Feb. 17, drainage, base, bit. surf. 4 lane divided hy. 9.374 mi. Int. Rte. 26, S. C. Docket No. 38.493, F.A. Proj. I-26-3 (17), Orangeburg Co. LB $2,219,548. CD 2/26, under LB.

▲† American Dredging Co., 12 S. 12 St., Phila., Pa., CA $2,551,960, enlarging Alafia River channel and Turning Basin, Tampa, ENG-08-123-59-39, FLORIDA. U. S. Eng., P. O. Box 4970, Jacksonville 1, Fla. Bids Feb. 17. CD 2/24, under LB.

BUILDINGS—LB & CA

▲ M. W. Kellogg Co., 711 3rd Ave., New York, N. Y. CA Est. $10,000,000, 500 ton daily kraft PULP PAPER MILL, COUNCE, TENN. Tennessee River Pulp & Paper Co., Savannah, Tenn. H. A. Simons Ltd., 16 E. Hastings St., Vancouver, B. C., engrs. Awarded Feb. 26. CD 8/15/56, under Tennessee.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 21 Wisconsin — March 25 Michigan
March 31 Wisconsin & Minnesota

STREETS AND ROADS

March 18, 25 Michigan — March 24 Wisconsin

BUILDINGS—BA

▲ Ind., Indianapolis—STATE OFFICE—BA 4/15—State Office Bldg. Comn., Old Trails Bldg., 309 W. Washington St., multistoried state office. $15,000,000. Plans deposit $1,500. Associated Indiana Archts., Peoples Bank Bldg., archts. CD 10/1/57.

▲ Ill., Chicago—BOWLING ALLEY, etc.—Bids Asked—Holiday Bowl, c/o Leo E. Aronson, 100 W. Monroe St., 250,000 sq. ft. bowling alley, motel, parking area, $4,000,000. S. H. Morris & Assocs., 134 N. LaSalle St., Zone 1, archts.

HEAVY CONSTRUCTION—LB & CA

▲ S. N. Nielsen Co., 3059 W. Augusta Blvd., Chicago, Ill., CA $4,907,534, WW, filtration plant, Central Filtration Plant, headhouse substructure, Contr. A, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago, Ill. Bids Jan. 26, awarded Feb. 26. CD-1/28, under LB.

BUILDINGS—LB & CA

▲ Campbell-Lowrie-Lautermilch Corp., 400 W. Madison St., Chicago 6, Ill., LB $3,000,000, RESEARCH AND DEVELOPMENT BLDG., GLENVIEW, ILL., National Dairy Products Corp., 923 Wilkegan Rd., Glenview, Ill. Bids Jan. 27. CD 1/7.

▲ Gilbert & Wolf, Inc., 6046 W. 63 St., Chicago, Ill. Owner Builds, $7,000,000, 400 HOMES Crestwood area, MIDLOTHIAN, ILL. A. J. Del Blanco, 5501 W. Irving Park Rd., Chicago, Ill., archt.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 20 Minnesota — March 20, 21 Texas
March 27 Missouri

STREETS AND ROADS

March 19 Kansas — March 20 Minnesota
March 20, 21 Texas — March 27 Missouri

BUILDINGS—BA

▲ Tex., Corpus Christi—HOSPITAL—Bids Asked—Sisters of Charity of Incarnate Word, c/o Spohn Hospital, 1436 3rd St., 5 story, bsmnt., 135 bed Spohn hospital addn., incl. remodeling existing hospital, (Proj. Texas-178). $2,715,000. Wade, Gibson & Martin, 1101 S. Brownlee St., Corpus Christi, archts., and O'Connell & Probst, 504 W. 7th St., Austin, consult. archts. H. P. McElhaney, 525 Glazebrook St., Corpus Christi, and Vernor & Collins, 304 Green Ave., Taft, engrs. CD 1/23.

HEAVY CONSTRUCTION—LB & CA

▲ MINNESOTA—State Hy. Dpt., Hy. Bldg., Capitol Grounds, St. Paul. Bids opened 2/27.

Minn.—Johnson Constr. Co., Box 1002, Litchfield, Minn., LB $2,486,487 (10 bidders), sand-grav. sub-base, grav. base, plant mixed bit. surf. concrete paving and bridges (six projects in one contract), 2.8 mi. TH 494 and TH 35, Hennepin Co.;

Minn.—Duininck Bros. & Gilchrist, Olivia, Minn., LB $597,336 (6 bidders), grav. base, road mixed, bit. base and bridges 1.5 mi. at and near Montevideo, Chippewa Co.; LB $359,277 (15 bidders), base repair and plant mixed bit. surf. 28.4 mi. between 0.2 mi. south of north limits of Hutchinson and Jct. TH 55 in Kimball Prairie, Meeker, McLeod and Stearns Counties. CD 2/11.

▲† Western Contg. Corp., 400 Benson Bldg., Sioux City, Iowa, LB $8,269,000, earthwork, Stage VII, consisting of Sched. A, right bank excav., left bank excav., rolled embankment, uncompacted fill barrier, levee embankment, 48 in. right bank drainage conduit, incl. exten. settlement gates, and piezometer tubes; Sched. B, riprap (furnish, place) spalls, filter blanket; Sched. C, the entire work, Oahe Reservoir Proj., near Pierre, ENG-25-066-59-66, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 4. CD 1/26.

▲ Mitchell Darby Constr. Co., P.O. Box 160, McAllen, Tex., CA $2,404,148, 33 mi. concrete cylinder pipe line from Martin Co. well field to Odessa near BIG SPRING, TEX. Colorado River Municipal Water Dist., 205 Permian Bldg., Big Spring, Tex. Bids Feb. 26. CD 3/2, under LB.

▲† Blount Bros. Constr. Co., 79 Commerce St., Montgomery, Ala., LB $12,422,104, est. $14,373,830 (14 bidders), 9 launch and service bldgs., 3 launch operations, 3 power and pump houses, installing 9 generators, underground electrical sys. and misc. work at 3 Atlas Missile Launching sites near Warren Air Force Base, ENG-25-066-59-50, CHEYENNE, WYO. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Mar. 4. CD 2/17.

BUILDINGS—LB & CA

▲ Mid-American Builders, Inc., c/o Fred Hornaman, 8701 Meadow Lane, Kansas City, Mo., Owner Builds, $5,000,000, 102 two story, concrete block, brick, built-up roofing APARTMENTS, incl. swimming pool and community house, parking, southeast corner of US 69 and 87th St., OVERLAND PARK, KAN. Herbert E. Duncan & Assocs., 4049 Pennsylvania, Kansas City, Mo., archts.

▲ M. W. Kellogg Co., 711 3rd Ave., New York, N. Y. CA Est. $25,000,000, 380,000 lb. per year high purity ethylene, propylene and butadene PLANT, BEAUMONT, TEX. Magnolia Petroleum Co. (Subsidiary Socony Mobil Oil Co.) N. Esperson Bldg., Houston, Tex. CD 4/12/57.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 25, April 19 California

STREETS AND ROADS

March 24 Idaho — April 1, 2 California

HEAVY CONSTRUCTION—LB & CA

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles,

Ukropina, Polich-Kraf, 201 F. Las Tunas—Dr., San Gabriel, Calif., CA $8,324,381, 4.1 mi. Golden State Freeway (U.S. 6-99) 8 lane, 14 structures and exten. flood control facilities, between 0.4 mi. east of Burbank Blvd. and 0.2 mi. west of Roscoe Blvd., VII-LA-4, BRB, LA. Los Angeles Co. Bids Feb. 13. CD 2/18, under LB.

BUILDINGS—LB & CA

▲ Barrett Constr. Co., 1800 Evans St., San Francisco, Calif., CA $6,211,101, general constr. 4 story, bonnet and roughed in 5th floor, steel frame with brick, masonry and glass exterior HOSPITAL, 20 acre site, Grant Rd. MOUNTAIN VIEW, CALIF. El Camino Hospital Dist., 673 Carolina St., Sunnyvale, Calif. Bids Feb. 4, awarded Feb. 25. CD 2/10, under LB.

▲ Butler-Harbour Constr. Co., 9751 Lincoln Ave., Anaheim, Calif., Owner Builds, $3,064,316, 223 frame stucco DWELLINGS, Mission Park, Tracts 1, 2, 3, OCEANSIDE, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

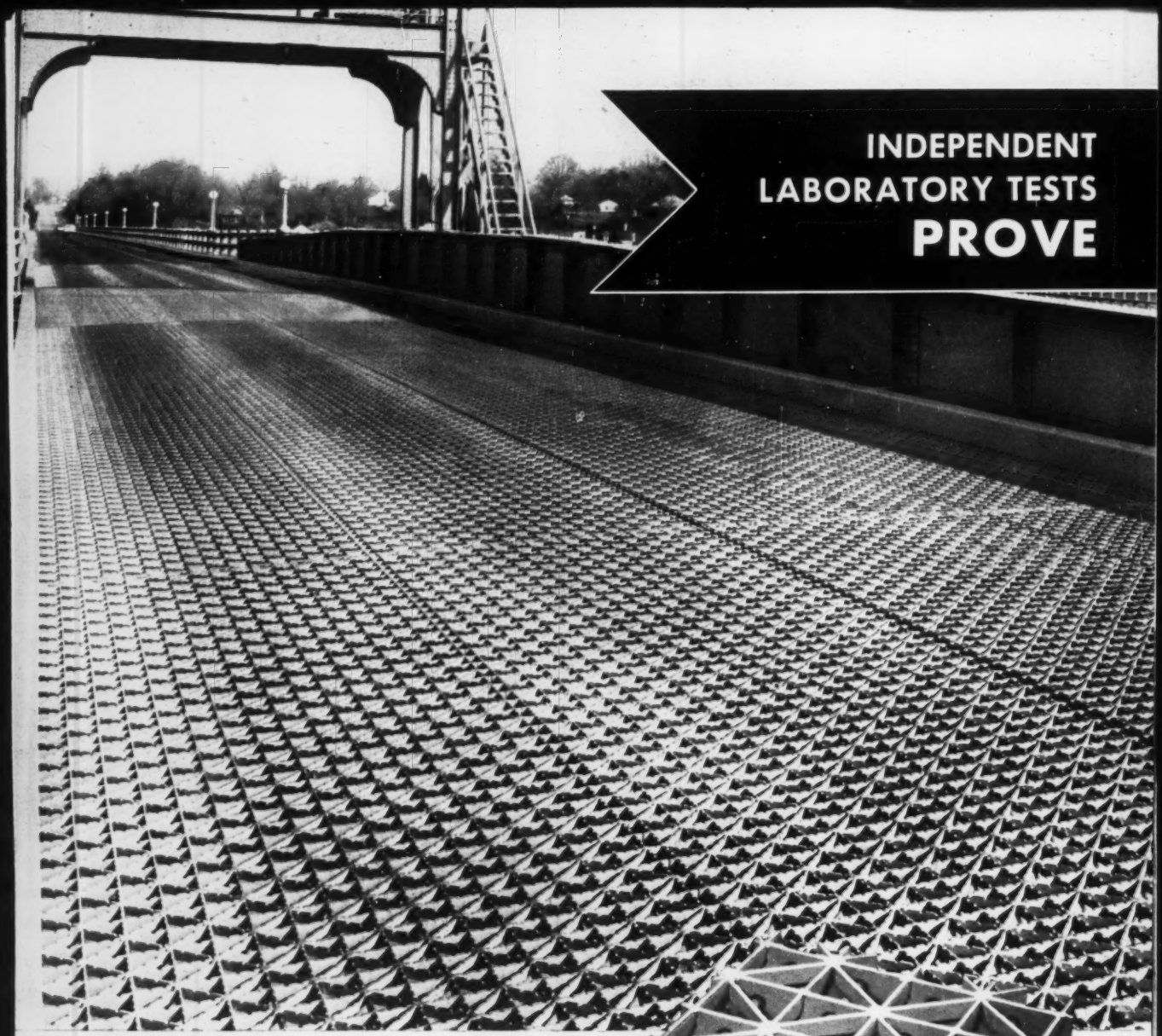
26 British Columbia

STREETS AND ROADS

April 2, 7 Alberta

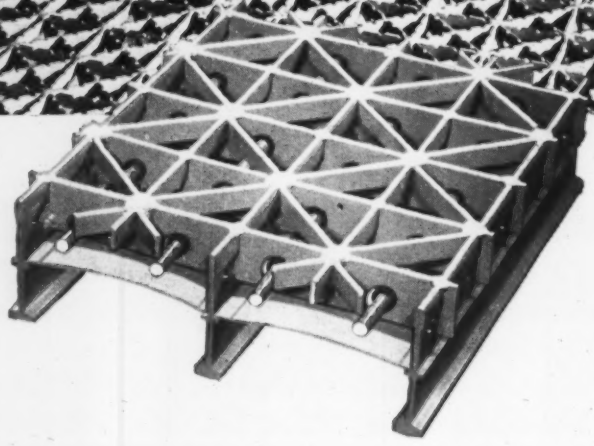
▲ Alberta—PIPE LINES—BA 3/31—Alberta Gas Trunk Line Co., Ltd., 320 9th Ave. W., Calgary, Contract 1, approx. 122 mi. 30 in. pipe line from Princess to Torrington; Contract 2, 43 mi. 16 in. gas pipe line from Torrington to Nevis single 16 in. O.D. submerged crossing approx. 1,000 ft. long under Red Deer River near Nevis. Part of a gathering sys. with Alberta for Trans Canada Pipeline. CD 1/5/56.

(Proposal Advertisements see pp. 89 to 92)



INDEPENDENT LABORATORY TESTS **PROVE**

Grid section at right shows concrete form pans and reinforcing rods for easy filling with concrete where a closed surface is desired for walkways, or over machinery, streets and railroads, or on the entire bridge. Serrated top surface is shown in grid section at far right for the usual open floor.



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General Sales Office, 280 Madison Avenue, New York City

—MANUFACTURERS—

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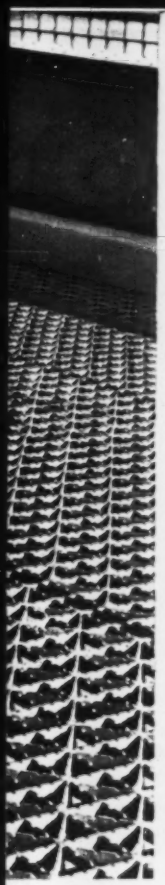
GREULICH 4-WAY GRID

Over ONE-THIRD STRONGER with Deflection More Than 40% LOWER

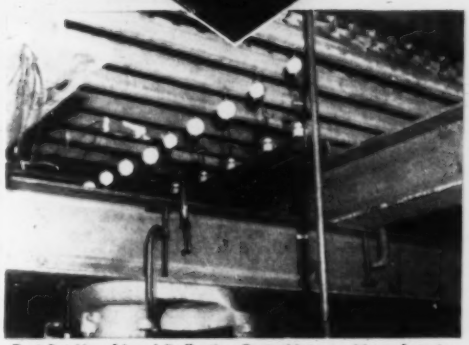


In independent laboratory tests comparing a Greulich 4-Way Grid 5-inch-deep section with a competitive similar open steel grid section, the maximum loads applied on a 13-inch disc were much greater than the two grids would ever carry, and much more severe than AASHO specifications.

In testing for deflection, under loads from 5,000 to 30,000 lbs., Greulich 4-Way Grid proved its greater strength and rigidity over Grid "B". Deflection of Grid "B" was more than 40% greater. In strain tests, Greulich 4-Way Grid again was well ahead as the strains in Grid "B" ranged from ⅓ to ½ higher.

These tests prove our statement that Greulich 4-Way Grid is stronger with much lower deflection under the same loading conditions. Also, that it is much less subject to bending, warping, weaving, or twisting under loads, thus increasing the life of the grid and its fatigue resistance.

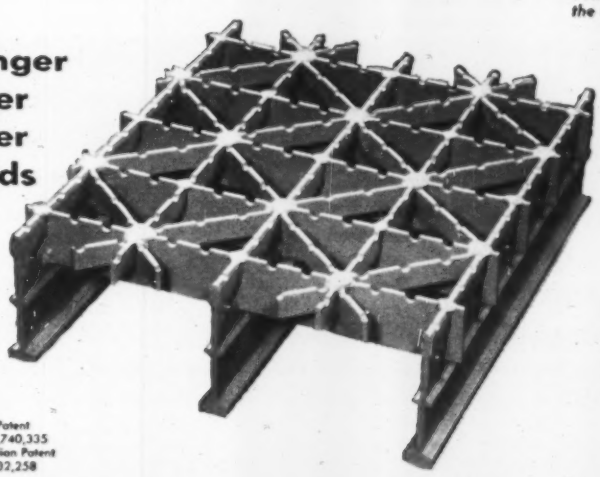
We will be glad to send you a copy of the complete laboratory test report. Address: Division E-2, Kerrigan Iron Works, Inc., Nashville, Tenn.



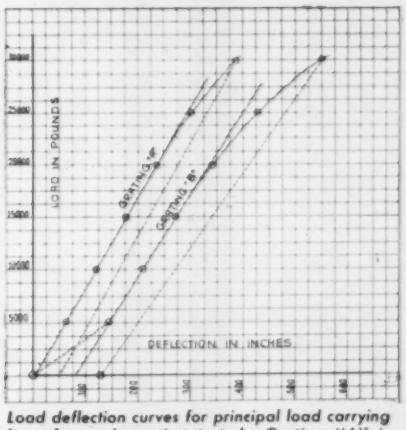
Test Set Up of Load Deflection Test. Note position of strain gages mounted on principal load carrying bars at mid-span.

Test Set Up of Load Deflection Test. Note 13-inch disc in the center where loads were applied.

- **Stronger**
- **Quieter**
- **20% Fewer Field Welds**



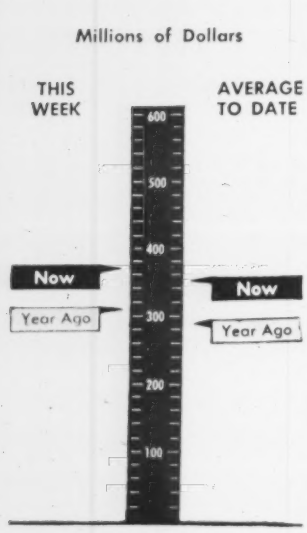
U. S. Patent
No. 2,740,335
Canadian Patent
No. 532,258



Load deflection curves for principal load carrying bars for each grating tested. Grating "A" is Greulich 4-Way Grid.

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

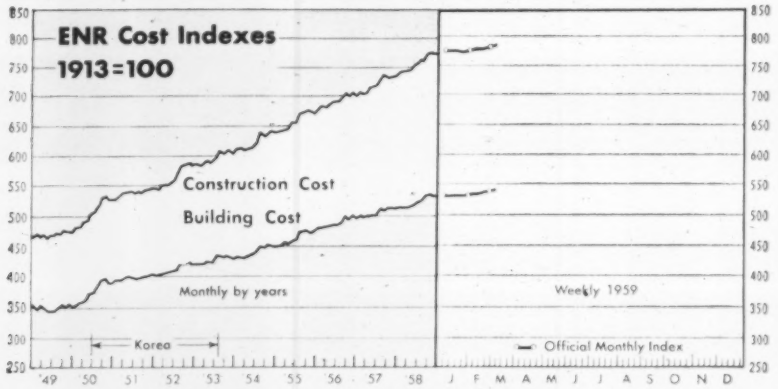
By Ownership	This Week millions	Cum. 11 wks 1959 millions	Chge '58-'59 %
ALL Heavy Constr.	$372.1	$3,850.8	+24
PRIVATE	202.2	1,867.9	+31
PUBLIC	169.9	1,982.9	+17
State & Municipal	144.8	1,408.6	+ 4
Federal	25.1	574.3	+70
By Type of Work			
PUBLIC			
Waterworks	10.6	105.2	+135
Sewerage	11.3	118.7	− 2
Bridges*	9.0	130.6†	+46
Highways	8.5	551.2†	+13
Earthworks, Waterways	39.8	144.2	+ 1
Buildings, Excl. Housing	69.9	515.2	+14
Housing	3.7	125.7	−49
Unclassified	17.1	292.0	+178
PRIVATE			
Buildings			
Mass Housing	82.5	759.1	+60
Commercial	37.1	461.4	+24
Industrial	79.9	553.0	+18
Unclassified	2.7	94.5	−13

*Includes private bridges †Revised

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

. . . CAPITAL

New Capital For Construction	Week of Mar. 5 millions	Cum. 10 wks 1959 millions	Chge '58-'59 %
Corporate Securities	$ 55.6	$625.4	−42
State and Municipal:			
All Except Housing	122.1	1,201.0	−22
Housing	3.2	4.5	+350
Federal Loans	0.3	17.3	−62
Federal Aid	....	....	....
Total Nonfederal	$181.2	$1,851.3	−31
Federal Appropriations:			
Projects in U.S.	....	....	−100
Outside U.S.	....	....	....
Total New Capital	$181.2	$1,851.3	−42


ENR Cost Indexes
1913=100
Construction Cost
Building Cost
Monthly by years
Weekly 1959
Korea
Official Monthly Index
'49 50 51 52 53 54 55 56 57 58 J F M A M J J A S O N D

CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Mar. 5 1959	% Change from Feb. 5 1959	% Change from Mar. 6 1958
Construction Cost	782.05	+0.3	+5.1
Building Cost	541.02	+0.6	+4.9

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

CONTRACTS AWARDED

	1959 Feb. (millions)	1959 2-Mos. (millions)	% Change from 1958 Feb.	% Change from 1958 2-Mos.
Total U. S., ENR reported	$1,314.5	$2,955.6	+12	+24
Private	750.2	1,433.7	+22	+27
Public	564.3	1,519.9	+0.5	+17
State and Municipal	427.3	1,082.3	+ 1	+ 4
Federal	137.0	437.6	−0.2	+66
ENR Volume Index, 1913=100	472	466	+ 6	+14

NEW CONSTRUCTION CAPITAL

Total U. S.	$818.1	$1,670.1	−55	−40
State and Municipal Bond Sales	574.7	1,080.3	−20	−15
Corporate Security Sales	231.5	572.9	−60	−41
Federal Loans, Aid (nonfederal work)	11.8	17.0	+ 7	−58
Federal Appropriations (federal work)	0	0	−100	−100

* Includes funds for outside U. S.

MATERIALS SHIPMENTS

Unit	1959 & 1958 Nov. (N) Dec. (D) Jan. (J)	Cum. No. of Mos.	Percent Change from Year Ago Mo.	Cum.
Portland Cement, Bur Mines, thous bbls	14,322(J)	14,322(1)	+ 5	+ 5
Cone Paving Awards, PCA, thous sq yd	8,964(J)	8,964(1)	+63	+63
Fabricated Structural Steel, thous tons	224(J)	224(1)	−29	−29
Bookings, AISC, thous tons	236(J)	236(1)	+45	+45
Reinforcing Bars, Net, AISI, thous tons	143(D)	2,035(12)	+43	−11
Lumber, NLMA, mil fbm	2,641(J)	2,641(1)	+ 9	+ 9
Orders, mil fbm	2,785(J)	2,785(1)	+ 9	+ 9
Production, mil fbm	2,629(J)	2,629(1)	+ 7	+ 7
Clay Products, Bureau of Census				
Brick, Unglazed, Common, Face, mil bri	661.2(N)	6,108.6(11)	+35	+ 3
Vitrified Clay Sewer Pipe, thous tons	151.9(N)	1,635.2(11)	+30	+ 6
Structural Tile, Unglazed, thous tons	47.0(N)	517.0(11)	+ 5	−14
Asphalt Products, Bureau of Census				
Asphalt Roofing, thous sales sqs	2,386.4(D)	58,117.1(12)	− 8	+ 9
Asphalt Siding, thous sales sqs	58.5(D)	1,038.9(12)	+21	+0.3
Aluminum, Wrought, Net, Bur Census				
Sheet and Plate (non-heat treatable), mil lbs	82.5(D)	949.2(12)	+39	+0.5
Wire and Cable, mil lbs	26.3(D)	270.0(12)	+23	− 4
Extruded Shapes (soft alloys), mil lbs	60.2(D)	691.4(12)	+28	+ 7

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS, thous	2,331(J)	2,331(1)	− 2	− 2
Contractor Failures, Dun & Bradstreet				
Number	188(J)	188(1)	+ 7	+ 7
Liabilities, thous	$8,274(J)	$8,274(1)	−16	−16

Port Development Gains Vigor

Proposals for this year top $276 million, with Gulf cities aiming to expand their facilities

Industrialists and port officials have some big plans for water-front development—more than $276.4 million worth. It will be a continuation of the 1958 gain in this type of construction, which occurred despite a general recession.

Last year was second to record-breaking 1956 for waterside industrial plant construction and expansion, according to the American Waterways Operators, Inc. In 1956, 565 waterside plant locations were developed. The number dropped to 486 in 1957, but recovered hesitantly to 488 in 1958.

The chemical and petroleum industries set the pace in waterside development, because of the water required in processing operations.

Cities along the Gulf Coast are planning to expand harbor facilities. Among them are Houston and Beaumont, Tex., New Orleans, and Gulfport, Miss.

Houston's Port Commission authorized the sale of $12.5 million in revenue bonds to finance the biggest building program in its history. The bonds will be retired with port earnings, estimated at $1.75 million last year. Plans include: construction and expansion of cargo handling, dock and storage facilities, $8.9 million; maintenance and machine shops, $400,000; channel improvements, $1.8 million; trade center, $500,000; railroad relocation, $800,000.

The port's general manager, J. P. Turner, also recommends that a $20-million improvement program be started four years after start of the current program. This plan calls for: expansion of docks, cargo handling and storage facilities, $18.2 million; additional railroad facilities, $1.3 million; expanded port office building, $600,000.

At the Port of Beaumont, officials are backing a $500,000 expansion program, biggest since early 1957. Engineering is now under way.

The project will include relocation of almost 2,700 ft of railroad track and expansion of three warehouses. Port earnings are expected to pay the cost.

The port of New Orleans is working on the largest expansion program in its history, according to the Board of Commissioners. Between now and 1970, the city will spend $121.7 million for new and expanded wharves, larger grain elevators, a materials handling plant and the Mississippi River-Gulf Outlet.

The wharves and handling plant will cost $105.2 million and the public grain elevator $8.5 million. Land for the new outlet will cost about $7 million. Clearing, grading, roadways and utilities will account for another $1 million. Seventeen existing timber general cargo wharves will be replaced by concrete-and-steel facilities at an estimated cost of $26.2 million.

Tippetts-Abbett-McCarthy-Stratton, New York City consulting engineers, recommend a $14.4-million to $17.9-million port improvement program for Gulfport. Existing port facilities are valued at $9.6 million.

The long-range plan proposes: modification of existing facilities, $1.3 million; three-stage construction of cargo facilities, $6.9 million; banana import terminal building, $1.6 million; grain elevator, $5.2 million to $8.7 million.

The engineering survey recommends the program be financed by $10 million in bonds issued by either the port or the state under 1958 Port Authority legislation. They would be retired with port earnings and a new county tax.

Homebuilding Looks Up

Consumers Plan More Purchases, Improvements

Type of Purchase	Early 1959	Early 1958	Early 1957	Early 1956	Early 1955
Houses	9.3%	7.5%	8.7%	9.4%	9.4%
Home improvements and maintenance	24.8%	22.1%	23.4%	22.2%	22.0%

More Americans will buy houses this year than did last year. And more homeowners will make improvements.

That good news for the homebuilding industry shows up in preliminary data from the Federal Reserve Board's 1959 Survey of Consumer Intentions. It reflects a marked shift toward general optimism about 1959 business.

At the corresponding time in 1958, about 7.5% of the interviewed consumers expected to buy houses. This year, the percentage of potential home purchasers rose to 9.3%. That may seem small, but it points to a more vigorous home market in 1959.

The Federal Reserve calls it "much larger" than 1958's and points out that it approaches the previous highs of 9.4% attained in the boom years of 1955 and 1956.

Some 24.8% told interviewers they plan home improvement outlays during the year; in 1958, only 22.1% had such plans. The survey shows, however, that the median cost of expected home improvement outlays is down slightly, from $380 a year ago to $360 this year, and from $460 two years back.

The report suggests that most consumers expect higher prices in 1960, but they think they'll do better financially. Last year, 37% thought their earnings would rise during the year; this year, 42% expect a rise. And 55% are portrayed now as optimistic about the general business outlook for 1959, whereas a year ago only 31% thought 1958 would be a good business year.

"The recovery in economic activity that occurred by early 1959," says the report, "was reflected in an increase from early 1958 in the proportion of consumer spending units who said that they were earning more than a year earlier and a corresponding decrease in the proportion who said their earnings had declined. This improvement . . . was reported by all of the major occupational groups . . . (and) nearly four in ten consumers said they were better off financially compared with one in three consumers in early 1958."

In January and the first 10 days of February, the Federal Reserve, in cooperation with the University of Michigan Survey Research Center, conducted 2,550 interviews in the 12 largest metropolitan areas and in 54 other sections.

This week's report is based on preliminary tabulations. But these are worthwhile figures, because in past years they have been reliable indicators.

(Turn the page)

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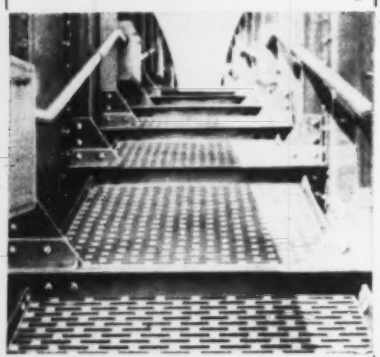

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Checking the Records

Auditors probing books of Alabama Docks Board

State auditors are checking the books of the Alabama State Docks Board. Early reports indicate $1.2 million was spent by the board over and above that permitted by bond issues. The auditors' probe was requested by Earl McGowin, new director of the board.

Gov. John Patterson says he will call for a grand jury investigation if findings of the auditors warrant the action.

The regular session of the legislature, which starts in May, may also investigate.

The dock board's profits dropped from $1.2 million in 1957 to only $200,000 last year. Governor Patterson, former state attorney general, says "wasteful spending," caused the drop.

Some purchasing methods and other expenditures were also questioned by two newspapers, the BIRMINGHAM NEWS and MOBILE PRESS. They include:

- Purchase and operation of two luxury yachts. Operating costs are placed at $140,000 annually.
- Purchase of a $41,000 airplane.
- Expense-paid trip to Brussels World's Fair by Knox McRae, former director of the board, and Dr. Louis Friedman, an advisory member.
- Purchase of four cranes from a Birmingham company for $232,577. According to the two newspapers, the specifications for the cranes were drawn so that only the company that sold the cranes could bid.

Mr. McRae, now sheriff of Morgan County, told ENR that the charges are exaggerated. He admitted the yachts "are plush" but, he said, they were used both by the docks agency and the industrial development committee to entertain prospective customers.

"I'd say the entertaining done on the yachts brought the state three times the tax equivalent of money spent for maintaining the vessels," Mr. McRae said. He said the airplane was used for the same purposes.

He also conceded that he went to Brussels after first checking with the docks' counsel "to see if it was legal." Mr. McRae said, "I made the Brussels trip to promote business for the docks."

Mr. McRae said the bid invitations for the cranes were widely publicized and advertised throughout the country. "We got eight bids, all from Alabama companies. If more didn't bid, it isn't our fault," he said.

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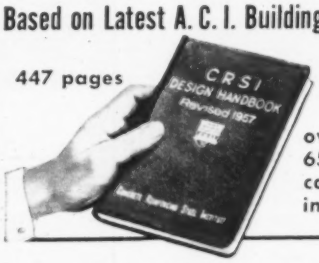

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Ten-ton Blaw-Knox bridge deck form moves on traveler to new position. Steel chains for fir gates are cast integrally with girders. Old River Control Project is a $47 million job designed to preserve Mississippi's flow into its lower basin.

Blaw-Knox steel forms cut costs, simplify concreting operations on Old River Control Project

Blaw-Knox multi-purpose bridge deck forms used in the construction of the Overbank Control Structure on the Old River Control Project near Simmesport, Louisiana amortized their cost for F&C Engineering Company, prime contractors on the huge project, less than three-quarters of the way through the job.

A three man crew strips and moves the form into position in less than a day. Six additional men align the form and position girder and curb forms which are fabricated on the ground and raised by crane. To date, F&C has averaged one pour every third day.

With this kind of performance, it is easy to see why F&C expects to complete concreting ahead of schedule, at the same time cut job costs. The number of skilled carpenters is greatly reduced, along with material requirements. In your next concrete project, whatever its nature, call in the Blaw-Knox Steel Forms Consultation Service to help in planning for more efficient forming, lower costs, better job profits. There's no obligation, of course.

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Unions Go Direct to Congress

- **Largest legislative conference of building tradesmen asks support for a six-point program. Response: Good.**
- **Congressmen are warm to Kennedy-Ervin bill with Taft-Hartley amendments and to changes in the Davis-Bacon Act.**
- **But housing, school and airport proposals draw some "balanced budget" and states' rights opposition from House members.**

Nearly four thousand building trades unionists swarmed through Washington last week on a selling mission.

Their goal: to mobilize Congressional support for labor's legislative aims.

By the end of the week the largest legislative conference in the history of the trade union movement had received what it considered an impressive number of favorable Congressional commitments for each of the following proposals.

- Passage of the Kennedy-Ervin labor reform bill with the Title VI Taft-Hartley amendments now attached.
- Early but separate consideration of general Taft-Hartley revisions, including repeal of the right-to-work law Section 14(b).
- Complete overhaul of the Davis-Bacon (prevailing wage) law.
- Enactment of comprehensive housing, school and airport construction bills.

Pennsylvania building tradesmen, for example, reported that 65% of their Congressional delegation is supporting the entire program; the report from West Virginia was "100%."

The Kennedy-Ervin, Taft-Hartley and Davis-Bacon proposals have the heaviest support—and apparently enough to put them in a favorable legislative position, at least in the Senate.

But the housing, school and airport issues are running into fairly widespread and serious budget and states' rights objections, particularly in the House. The Senate has passed housing and airport bills by comfortable majorities.

The direction of the political wind is apparent in these figures from the delegates' reports: Of the 98 Senators, at least 59 will support the Kennedy-Ervin bill "as is"; 56 will vote for the Davis-Bacon proposal; 48 for the Taft-Hartley program; and 46 for the school construction proposal. The balance is "about" equally divided between indecision and opposition. (Yea votes in the Senate on the housing and airport bills last month were 60 and 63, respectively.)

• **A new look**—The four-day meeting in Washington was the Fifth Annual Legislative Conference of the Building and Construction Trades Department. Two days were spent at formal conference sessions and two in personal interviews on Capitol Hill.

Compared to some of its predecessors, the conference reflected a new degree of businesslike, serious and efficient formality, impressive self-restraint and a number of significant undertones.

Resulting impression is that the department is riding high as a partner in the merged labor movement and that the building trades are still recognized in and out of the ranks of labor as the backbone of the trade union movement. Much of this was attributed at the conference by Senators, Congressmen and union leaders to the "vision" and "statesmanship" of department President Richard Gray, who has shaped the tone, temperament and nature of the legislative conferences.

This year the conference was conducted on four basic premises:

- Construction workers, as citizens, are interested in the welfare of their country as well as in their own.
- As responsible citizens they should make their views known to their elected representatives.
- In presenting their views, they should be "considerate and respectful," "businesslike," and neither "argumentative, derogatory nor opinionated."
- The things they want are not ill-considered, new, novel or radical. Their construction requests represent sound and necessary national investments and not prodigal spending.

As a result, the delegates reported, the building trades' position on Capitol Hill is steadily improving and the point has been reached at which Senators and Congressmen have a fairly good grasp of the peculiar problems of the construction industry.

• **New support**—To those who have followed the internal feuds in the AFL-CIO, the conference relationship between the federation and the department was noticeably cordial.

For the first time since the labor merger, for example, the department's legislative program had the full and unqualified endorsement of the AFL-CIO.

Federation President George Meany hailed it as an unselfish and constructive program geared to the economic needs of the nation. It is "good for America," he said.

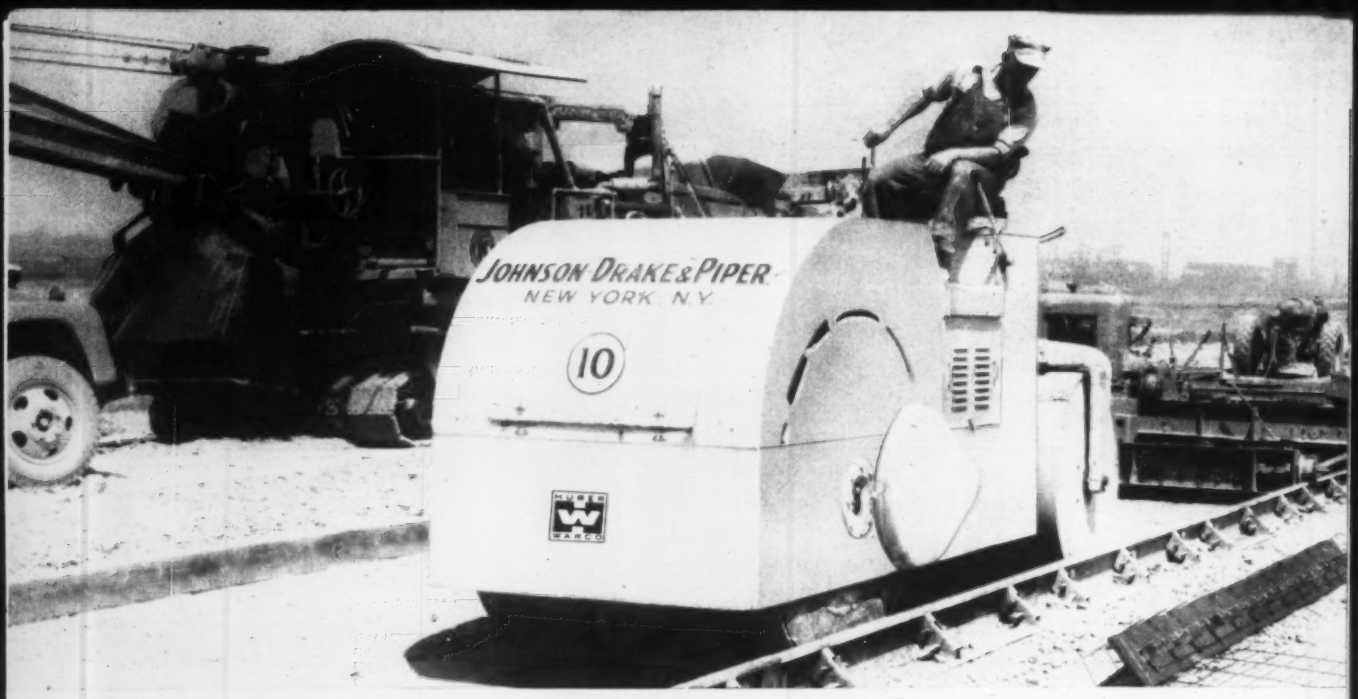
He called the Kennedy-Ervin Title VI provisions, which include legalization of pre-hire contracts, a "matter of simple justice to the building trades" and said if those provisions are deleted the AFL-CIO will use its "influence on members of Congress" to defeat the rest of the bill.

• **Year of decision**—The possibility of this deletion was described by Mr. Gray at the outset of the conference as "our greatest danger."

"We all know," he said, "that this is the year of decision on labor legislation. If the building trades provisions are junked at this late date, after the Senate has approved them by overwhelming margins on two previous occasions, it may take two years to revive interest in them."

Sen. John Kennedy (D., Mass.), who drafted the Kennedy-Ervin bill, assured the delegates that the bill "is going

(Continued on page 89)



Design of the Huber-Warco 8-12 ton tandem permits the unit to compact base gravel close to steel forms.

H-W Units at work on Erie

Handling the compaction work for Johnson, Drake & Piper on project FAET-564 on the new Erie Thruway were three Huber-Warco rollers—two 10 ton 3-wheels and an 8-12 ton tandem.

Known as the West Seneca project, it involved 4.19 miles of pavement including interchanges, and seven bridges.

On this job the Huber-Warco rollers compacted one and a half million yards of dirt, about 10,000 yards of bank-run stone, and 32,000 yards of foundation course gravel for the road bed.

For rolling inside the steel forms, Johnson, Drake & Piper used their Huber-Warco tandem. The roller followed directly behind the form grader. The design of this Huber-Warco tandem enabled the operator to compact the material right up to the forms. The extra operator visibility and ease of steering helped simplify the job throughout the many hours of precision work.

Huber-Warco tandem and 3-wheel rollers offer many distinct advantages that add up to more efficient and economical rolling. They each offer a torque converter and two-speed transmission. In addition, these units feature a tail-shaft governor. Within close limits, this tail-shaft governor maintains the rolling speed set by the operator, regardless of the grade.

Another important feature is a completely adjustable guide roll assembly that eliminates road "scuff" caused by looseness. Easy adjustment makes it possible to keep the guide roll assembly in factory-perfect

Huber-Warco Company

MARION, OHIO

Huber-Warco on the job

Huber-Warco tandems and 3-wheels handle compaction assignments for Johnson, Drake & Piper on New York's Erie Thruway project.

Thruway

Torque converter and 2-speed transmission add to efficient compaction by this Huber-Warco 10-ton 3-wheel roller.

alignment for the life of the roller.

In the Huber-Warco 3-wheel roller line both standard and variable weight rolls are available in a range of from 10 to 14 tons. The tandem line consists of seven models ranging from 3-5 to 10-14 ton.

Your Huber-Warco distributor can give you specifications on the Huber-Warco tandem and 3-wheel roller line. Contact him soon and be ready for smoother, more profitable rolling operations.

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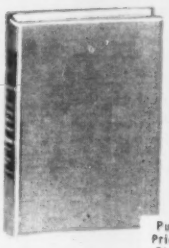
Design of Steel Structures by E. H. and C. N. Gaylord. Covers both steel and aluminum structural members.



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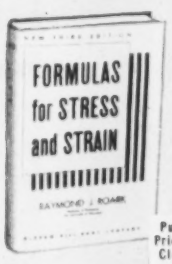

Publisher's Price, $7.75
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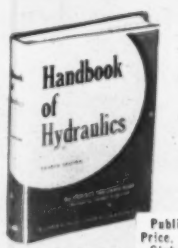
Formulas for Stress and Strain, 3rd Ed. by R. J. Roark. A practical handbook for strength of materials.



Publisher's Price, $10.00
Club Price, $8.50

Handbook of Hydraulics, 4th Ed. by H. W. King and E. F. Brater. Gives basic formulas, tables, and methods.

Publisher's Price, $6.50
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Legal Guide for Contractors, Architects, and Engineers by I. Vernon Werblin. Legal points of 83 typical situations.

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- ☐ Handbook of Hydraulics
- ☐ Legal Guide for Contractors, Architects, and Engineers

ENR-3-12

to pass" in its present form. Present opposition to it from "large employer organizations," he said, is "hopelessly irresponsible."

(The bill in its present form would legalize employer contributions to apprentice and journeymen training programs and to trust funds for pooled vacations. It would validate pre-hire labor contracts, permit a seven-day union shop clause and establish the legality of nondiscriminatory but exclusive union referral systems.)

The justification given for keeping these in the bill, even though general Taft-Hartley revisions may be considered later, is that they have been thoroughly considered and approved by the Senate in the past. "There is no sense to drop provisions, which the Administration and Democrats support," Senator Kennedy said, "merely because they think it should be put off."

And, President Gray warned, "Labor cannot and will not countenance any further postponement, merely for the sake of postponement, in providing this justified and necessary relief to the building trades."

• **Taft-Hartley revisions**—On general changes in the Taft-Hartley Act, the building trades' strategy is to seek consideration of these after the Senate Labor Committee's nonpartisan advisory panel of labor law experts has completed its present study.

The construction unions are seeking three things in particular:

• An amendment permitting secondary boycotts at common construction sites under certain conditions. This would reverse the Denver Building Trades case, allow union workers to refuse to work alongside nonunion ones and make it easier for the building trades to organize.

• Repeal of Section 14(b), which permits states to pass right-to-work laws outlawing the union shop.

• Removal of the present requirement that calls for a mandatory injunction against labor unions accused of unfair labor practices under Section 8(b)(4). The injunction is discretionary in cases against employers and the unions want to "equalize the treatment."

The conference indicated that the objective facing the biggest obstacle is the repeal of Section 14(b). A number of delegates reported this has become a states' right issue. But Congressman James Roosevelt (D., Calif.) told the conference that repeal should be pushed hard this year because it "would take a miracle to get a better Congress in the future."

• **Prevailing wage proposals**—The most

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far reaching of all the legislative proposals, however, is the Davis-Bacon one.

Under the proposal, the Davis-Bacon Act would look like this:

- "Architects, technical engineers, draftsmen and technicians" would be covered as well as "laborers and mechanics."
- The law would apply to any nonfarm construction project costing more than $25,000 if at least a third of it is financed directly or indirectly (such as insured or guaranteed loans) by the federal government. All piecemeal Davis-Bacon provisions would be superseded.
- Wage determinations would include prevailing contractor payments to health and welfare, pension, vacation and apprenticeship funds.
- Payment of the prevailing overtime rate would be required. A minimum requirement would be time-and-a-half for hours in excess of eight a day or in excess of 40 a week or for over five consecutive days of work or for Saturday, Sunday and holiday work.
- Enforcement would be centralized in the Secretary of Labor.
- A three-man Construction Appeals Board, representing contractors, labor and the public, would be appointed by the President to hear appeals from wage determinations and from findings of violations.

Bills covering these points have been introduced in both houses.

The building trades say the changes are needed to meet today's prevailing conditions and to eliminate the present bidding advantage of "unfair contractors."

• **Miscellaneous programs**—The three legislative proposals that seemed to evoke the greatest controversy on Capitol Hill last week fall in the housing, school and airport fields.

Here, the building trades are asking for a broad housing law to spur construction of at least 2 million new homes each year, to eliminate slums and to redevelop slum areas; a comprehensive airport construction law to build new airports and modernize existing ones under a $1-billion federal-state program; and a four-year, $11.4-billion, federal-state program of new school construction and improved teacher standards and salaries.

The unions claim these are essential to the welfare and security of a growing America, that they will create "millions of new jobs at a time of critical unemployment" and that they will pay for themselves "in higher tax revenues to the government."

Opposition because of the cost factor, Mr. Gray said, "is false economy as well as foolish economics."

OFFICIAL PROPOSALS

Bids: April 2, 1959

New Jersey Turnpike Authority

CONTRACT NO. N-85

Proposals are invited for Contract No. N-85 which involves the installation of additional roadway lighting facilities in the median and on the toll plaza and other incidental work, at the Newark Airport Interchange of the New Jersey Turnpike, in the City of Newark, Essex County, New Jersey.

The principal items of work include:

Trenching and Backfilling	4,500 Lin. Ft.
Asbestos-Cement Conduit	3,250 Lin. Ft.
Metal Conduit	2,500 Lin. Ft.
Series Lighting Conductor	9,200 Lin. Ft.
Multiple Lighting Conductor	5,400 Lin. Ft.
Lighting Standards	32 Units
Additions to Three Transformer Stations	Lump Sums
Guard Rail-Median Barrier	Lump Sums
Macadam Median Surfacing	Lump Sums

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Standard Time, on the morning of April 2, 1959, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours on or after March 12, 1959 at the Office of the Authority and at the Office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 99 Church Street, New York 7, New York. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

March 6, 1959

Bids: March 24, 1959.

Notice to Bidders

Poughkeepsie, New York

Sealed proposals will be received by the New York State Bridge Authority at its office at Mid-Hudson Bridge Plaza, Poughkeepsie, until 2:00 P.M. Eastern Standard Time on the 24th of March, 1959, at which time and place they will be publicly opened and read for the furnishing of the labor and materials necessary for the complete cleaning and repainting of the Bear Mountain Bridge spanning the Hudson River near Peekskill, New York, and for other necessary items of bridge maintenance and repair.

Plans, specifications, proposal blanks, form of contract, bond and information for bidders may be seen at the office of the New York State Bridge Authority, Mid-Hudson Bridge Plaza, Poughkeepsie, New York, at the offices of Modjeski and Masters, Consulting Engineers, Sixth Street at Forster, Harrisburg, Pennsylvania. Copies of the same may be obtained therefrom upon a deposit of Fifteen Dollars ($15.00), which sum will be refunded if the plans and specifications are returned by bidders in good condition within thirty (30) days of the date of the award of the particular contract or the rejection of bids therefor. A refund of fifty per cent (50%) will be allowed to parties other than bidders, unless otherwise directed by the Authority.

A certified check on a National Bank, State Bank or Trust Company in the sum of ten per cent (10%) of the amount of the bid, made payable to the New York State Bridge Authority must accompany the bid, as a guarantee that the contract will be entered into, if awarded.

A faithful performance bond in the sum of fifty per cent (50%) of the contract price will be required.

A labor and material bond in the sum of one hundred per cent (100%) of the contract price will also be required.

The New York State Bridge Authority reserves the right to reject any or all bids.

JOHN S. STILLMAN
Chairman

OFFICIAL PROPOSALS

Bids: April 13, 1959

San Juan Metropolitan Sanitary Sewer System

Notice is hereby given that sealed bids for Section A of the San Juan Metropolitan Sanitary Sewer System, Bayamon Trunk Sewer, Part II, for Furnishing Concrete Sewer Pipe and Appurtenances will be received in accordance with the law by the Puerto Rico Aqueduct and Sewer Authority until three o'clock P.M., Atlantic Time, on the thirteenth day of April, 1959, at the office of the Authority in Santurce, Puerto Rico, and will then be publicly opened and read.

The work to be done comprises furnishing all materials and labor, tools, plant and equipment necessary for fabricating and delivering approximately 13,650 lineal feet of 66 inch and 72 inch reinforced concrete sewer pipe, together with rubber gaskets and rubber cement for making joints, all in accordance with specifications prepared by Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York, and #223 Manuel V. Domenech Street, Hato Rey Puerto Rico, mailing address, Post Office Box 8861, Fernandez Juncos Station, Santurce, Puerto Rico.

Copies of the specifications may be examined without charge at the office of the Treasurer of the Puerto Rico Aqueduct and Sewer Authority, at the Pentagon Building, Ponce de Leon Avenue, Stop 26½, Santurce, Puerto Rico, or at the offices of Buck, Seifert and Jost, Consulting Engineers, 223 Manuel V. Domenech Street, Hato Rey, Puerto Rico and 112 East 19th Street, New York 3, New York. Copies thereof may be obtained at the office of the Treasurer of the Puerto Rico Aqueduct and Sewer Authority, Stop 26½, Fernandez Juncos Avenue, Santurce, Puerto Rico or at the office of Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York, upon deposit of cash or certified check payable to the Puerto Rico Aqueduct and Sewer Authority in the amount of Twenty ($20.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within thirty (30) days after the date on which bids are received or else the entire deposit will be forfeited.

Special attention is called to the bidders that blank forms may be obtained only up to forty-eight (48) hours before the date for opening of bids and that any bid that does not contain the prices written in letters and figures will be rejected.

The Authority will receive bids only from persons or firms that have requested specifications and made the required deposit therefor under their own names.

Each proposal must be accompanied by a certified check or bid bond from a reliable surety company authorized to do business in Puerto Rico and satisfactory to the Authority, in amount equal to five (5%) percent of the proposal. The certified checks will be retained to pay for any damage or loss to the Authority, or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The project will be financed in part by a grant-in-aid from the United States Government under the provision of Public Law 660, Water Pollution Control Act Amendments of 1956.

The Authority reserves the right to consider bids for sixty (60) days after their receipt before awarding any contract and the right is reserved to waive any informalities, and to reject any or all bids. The award will be made to the responsible bidder submitting the lowest acceptable bid and the responsibility of the bidders will be determined by the Authority.

PUERTO RICO AQUEDUCT AND SEWER AUTHORITY
By: RAFAEL V. URRUTIA
Executive Director

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OFFICIAL PROPOSALS

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CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: April 2, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time on the 2nd day of April 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Erie	FASCE 59-1	Scajaquada Creek Expressway Sect. 1 (Niagara Thruway to Grant St. Interchange) Proj. U-1087(4)	1.90 (0.91 Acc.)	Viaduct Structure = 1.26 Miles 9" Cem. Conc. Pavt. Var. Wide = 0.41 Miles Asph. Conc. Pavt. = 0.26 Miles Misc. Work = 0.88 Miles	$357,000 Plans $10	$6,502,000
Erie (Int. Tour. Rte. 90N	FINTC 59-1 NTC 59-2	Interstate Route 506 New York State Thruway Niagara Section Sub. N2 to N7 (Buffalo East City Line to South Grand Island Bridge) Proj. I-865(19)	14.50	Furnish & Install Electric Lighting Supply Points Equip.	$9,000 Plans $5	162,000
DISTRICT No. 6, James H. Thomas, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Allegany	FASS 59-7	Belvidere-Angelica, Co. Rd. No. 20 Proj. S-529(1)	0.48	Bit. Mac. with Double Surf. Treat. Pavt. Comp. Beam Br. 3 Span 275'	$20,000 Plans $5	361,000
Schuyler (Rte. 14)	FARC 59-22	Watkins-Montour Falls, S.H. 5047 Proj. F-505(10)	1.33	Asphalt Concrete Pavement	$10,000 Plans $5	186,000
Steuben (Rte. 21)	FARC 59-21	Hornell-Wayland, Part 5, S.H. 8257 Proj. F-375(8)	2.63	Asph. Conc. Pavt. = 2.62 Miles Misc. Work = 0.01 Miles	$16,000 Plans $5	293,000
Steuben	FASS 59-9	Morgan Bridge, Co. Rd. No. 11 Proj. S-949(2)	0.81	Bit. Mac. with Double Surf. Treat. Pavt. Prestress Conc. Br. 4 Span 244'	$20,000 Plans $5	377,000
DISTRICT No. 7, Robert W. Sweet, District Engineer, 144 Van Duzee Street, Watertown, New York						
Franklin & St. Lawrence (Rte. 37)	RC 59-23	Massena-Helena, Pt. 1 & Pt. 2, S.H. 1261 and S.H. 1765 Raquette River, Hogansburg, Pt. 1 and Pt. 2, S.H. 1861 and S.H. 8396	4.58	Asphalt Concrete Pavement	$9,000 Plans $5	150,000
DISTRICT No. 9, Joseph C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Otsego	FASS 59-8	Unadilla-Copes Corners, Co. Rd. No. 3 Proj. S-481(1)	0.30	Bit. Mac. with Double Surf. Treat. Pavt. Deck Girder Br. 1 Span 124'	$11,000 Plans $5	211,000
DISTRICT No. 10, M. E. Goel, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Queens (Int. Tour. Rte 495)	FICE 59-2	Interstate Route Conn. 513 Clearview Expressway (33th Ave. to Willets Point Blvd.) Cont. No. 3 Proj. I-1112(11)	1.82 (2.82 Acc.)	9" Cem. Conc. Pavt. 2 @ 36' Var. Wide = 1.57 Miles (Access = 1.63 Miles Asph. Conc. and 1.19 Cem. Conc.) 3 Hy. Sep. W. F. Comp. Beam 2 Spans Each 114.3', 126.5' and 121' 1 Ped. Overpass W. F. Beam 4 Span 212.5' Misc. Work = 0.25 Miles	$420,000 Plans $10	7,678,000
Suffolk	HSP 59-1	Heckscher State Parkway (Sunrise Highway to Heckscher State Park) Cont. 1	6.27 (4.43 Acc.)	8" Cem. Conc. Pavt. with Carbon Black 2 @ 25' Var. Wide = 3.25 Miles 8" Cem. Conc. Pavt. Var. Wide = 2.64 Miles Asph. Conc. Pavt. = 4.73 Miles Misc. Work = 0.08 Mi. 4 Hy. Sep. Reinf. Conc. Rig. Frames 65.2', 66.5', 103.8' and 123.8' 1 Hy. Sep. Comp. Girder, 4 Span 215.2' 1 RR Sep. Comp. Girder, 2 Span 167.8'	$458,000 Plans $10	8,327,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal. Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5166) will be received at Helena, Montana, until 10 a.m. Mountain Standard Time, April 16, 1959, for furnishing labor and materials for earthwork and structures, North and East Side Laterals and Drains, Helena Valley Unit, Montana, Missouri River Basin Project. Location near Helena, Montana. Principal items are 1,150,000 cu. yds. excavation; 2,600 cu. yds. concrete; 7,447 lin. ft. corrugated-metal pipe; 14,993 lin. ft. concrete pipe; 8,510 lin. ft. drain pipe; and other work. Completion time 630 days. For particulars, address Bureau of Reclamation, P. O. Box 551, Helena, Montana; or Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

Bids: April 7, 1959.

Contract BP-160.014

THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
NEW PIER 10
APRON EXTENSION, DREDGING AND SHEET PILING

Sealed proposals for the construction of an apron extension and associated dredging and sheet piling at the upland area for new Pier 10 at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 7, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $70.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1601, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 12, 1959

OFFICIAL PROPOSALS

Bids: April 3, 1959

Preston Glenn Airport City of Lynchburg, Virginia (Airport Improvements, Stage 1) (FAA Project #8-44-004-01)

Sealed proposals will be received by the City Manager, Robert D. Morrison, Lynchburg Virginia, until 4:00 P.M., Friday, April 3, 1959, for the following project; at which time the proposals will be publicly opened in the Council Chambers, City Hall, City of Lynchburg, Virginia.

Plans, Specifications and Contract Documents are open to public inspection at the office of the City Manager, City Hall, Lynchburg, Virginia, or may be obtained at the office of Garland M. Gay & Associates, Architects, 205 Seventh Street, Lynchburg, Virginia, subject to the following conditions:

Deposit of $50.00 will be required for the Contract Documents. Deposit will be refunded to each General Contractor submitting a bona fide bid, upon the return of Plans and Specifications, in good condition, within ten (10) days after the receipt of bids. Request for Contract Documents shall be limited to two (2) sets to each General Contractor. Sub-contractors may secure one (1) set of these documents for a purchase price in the amount of the deposit, non-refundable.

All bids must be accompanied by a certified check for not less than 5% of the base bid or acceptable bidder's bond for not less than 6% of the base bid, made payable to THE CITY OF LYNCHBURG, VIRGINIA.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of sixty days.

The Owners reserve the right to reject any or all bids and to waive informalities in bidding.

The attention of the bidder is invited to Title 54, Chapter 7, Code of Virginia, 1950, which requires evidence of a certificate of Registration before his bid may be received and considered on a general or subcontract of $20,000.00 or more. In compliance with this requirement the bidder will place on the outside of the envelope containing his bid the following notation: Registered Contractor, Virginia Certificate No. ..... 19....

Federal Current Minimum Wage Rate Schedules shall be utilized in this project and shall be furnished by Addendum when available.

CITY OF LYNCHBURG, VIRGINIA
By: Robert D. Morrison
City Manager

Bids: March 31, 1959

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. on Tuesday, March 31, 1959

For Throgs Neck Bridge Contract No. TN-12C, Bronx Plaza Roadway and Cinder Storage Structure, Borough of the Bronx. The bid must be accompanied by a deposit in the amount of $80,000.00.

Plans, specifications and contract documents may be purchased at the office of the Authority for $40.00 which will not be refunded.

Bids: March 27, 1959.

Govt. of District of Columbia, Dept. of Hwys. & Traffic, D. C.

February 27, 1959.

SEALED PROPOSALS will be received in Room 404, 499 Pa. Ave., N.W., Wash. 1, D.C., until 2 PM, EST, March 27, 1959, and then publicly opened and read for construction of Channel Piers for Washington Channel Bridge, District of Columbia Bridge No. 1113, Federal Aid Interstate Project No. I-95-1(18)1, consisting of 6,833 cu. yds. Structure Excavation; 12,908 cu. yds. Concrete; 71,797 lin. ft. Steel H Beam piles in place; and 38,519 cu. ft Class B Stone Masonry Facing. "Minimum wage rates for this project have been predetermined as required by law". Proposal forms, plans and specifications obtainable from Supervisor, Bid & Contract Section, Procurement Office, D.C., Rm. 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D.C. Treasurer (phone NA 8-6000, Ext. 2378).

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

MARCH 26TH ISSUE CLOSES MARCH 9TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take 1/2 of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication, Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Wanted: Concrete Paving Foreman. At least 5 years experience in highway or airport paving. Location—Ohio. P-9691, Engineering News-Record.

Streets Superintendent—requires 5 years experience in all-round street maintenance and cleaning operations; two years supervisory; age 30 through 50; written and oral exams given. Salary range: 192 to 600 with starting salary open. Write the Personnel Office, City Hall, City of Cedar Rapids, Iowa.

City Engineer—registered engineer with qualifying experience in supervision of sewage treatment plant, storm & sanitary sewers, street and sidewalk design and building code. Salary open as to qualifications. City Clerk, City Hall, Algona, Iowa.

Estimator (Earthwork) Wanted by major construction equipment manufacturer. Background must include heavy experience estimating large earthmoving projects (dams, highways, etc.) Attractive location and fringe benefit program. Send complete resume including salary expected. P-1089, Engineering News-Record.

Wanted: Qualified Clerk of Works for completely new general hospital with 73 beds. Bid price of $1,241,000 by well known Western New York contractor. Approximately 15 months duration for contract. Job starts about April 1, 1959. Salary open. Contact Wayne A. Manson, Administrator, Ira Davenport Memorial Hospital, Bath, New York. Phone PR 6-2141.

Grading Superintendent for Highway, Airport and Railroad Construction. Year-round employment, must be sober and experienced. Engineering background desired. Location, midwest. State age, education, background, experience and salary desired. P-1034, Engineering News-Record.

Experienced Reinforcing Steel Detailer. Excellent starting salary and usual benefits. New office and Plant under construction. Our employees know of this advertisement. P-1080, Engineering News-Record.

City Planning wanted by the City of St. Joseph, Missouri, population approximately 87,000. Young graduate civil engineer with City Planning experience or recent engineering graduate with City Planning Major. Give complete resume and salary expected in first letter. Write to Mayor Arthur J. Meers, City Hall, St. Joseph, Missouri.

Mech. Estimator for N.Y.C. Gen. Contractor of Sewage Plants, Water works—Excellent opportunity. P-1181, Engineering News-Record.

Rock Tunnel Superintendent, for 5400 l.f. project Central New York. Will consider only first class man with broad, extensive background. Start immediately. P-1158, Engineering News-Record.

Civil engineer, graduate, with strong background in design, plant control, placement bituminous concrete mixes. $8500-10,000 range. Give full information. P-1161, Engineering News-Record.

Draftsman-Estimator for growing Prestressed Concrete manufacturer on Central-South coast. Similar experience desirable but not essential. Architectural background with field experience desired. Good opportunity for man with initiative. Send resume to P-1168, Engineering News-Record.

POSITIONS VACANT

Shirt sleeved superintendent, master mechanic know-how in steel fabricating and precast concrete. Excellent earning future for one who can show results in fast growing prestressed concrete industry. Only complete resume in first reply with photo considered. P-1132, Engineering News-Record.

Wanted: Engineer Estimator, Missouri General Contractor, work in home office estimating heavy construction, highways, bridges, earth and concrete work. Give complete resume, age, education, references and experience. All replies confidential. P-1155, Engineering News-Record.

Wanted—Construction Superintendents: Long established midwest construction firm has opening for two or more qualified field construction superintendents. Engineering background preferred but not required. Applicants must be aggressive, cost-conscious and well grounded in reinforced concrete, structural steel and masonry structures. Complete education, experience data and salary expected should be furnished in first reply. P-1107, Engineering News-Record.

Men with experience in making quantity surveys from architectural plans and specifications needed by a large Oklahoma Industrial Firm. Preferably with steel or general contracting experience. Give full details of personal data and experience with first letter. P-1106, Engineering News-Record.

• POSITIONS WANTED

Construction Engineer Field Layout—Supervision city work industrial plant, subdivision development, drafting ability—S.W. or S.E. area. P. O. Box 53-296 Miami, Fla.

Structural Engineer—Extensive experience. Registered. Desire executive position or partnership. PW-9993, Engineering News-Record.

Construction Executive and General Superintendent. 25 years experience in commercial, industrial, public buildings, and mass housing, experience includes all phases of construction, job management, purchasing, subcontracting, processing of claims, etc. Desire permanent relocation eastern U. S. PW-1006, Engineering News-Record.

Plant Manager—Fifteen years experience. 1,000,000 square feet, $300,000,00. Budget 10 years additional as City Engineer. PW-9995, Engineering News-Record.

Available March. Civil Engineer—Construction Superintendent. Age 33. Supervisory experience on industrial, commercial and institutional buildings, and on paving and earthwork. Interested in management opportunity. Will relocate. PW-9997, Engineering News-Record.

Layout Engineer. Age 34. 6 years experience in Heavy Construction supervising several parties, also experienced in Optical Tooling for Indust. Machinery. Prefer Southeast will consider other. PW-1064, Engineering News-Record.

(Continued on page 94)

When Answering
BOX NUMBERS . . .
to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

MECHANICAL ENGINEER

Major Foreign Operating Oil Company offers career opportunity for graduate mechanical engineer. Initial assignment in our New York Office.

To conduct equipment evaluation, technical service on mechanical equipment used in oil refineries and cross country pipelines, pressure vessel designing, etc.

Salary commensurate with experience. Write outlining personal history and work experience (please include telephone number) to:

P-1139, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CITY OF CINCINNATI
ROOM 260 CITY HALL

SANITARY ENGINEER—30-55 years. Graduate sanitary, civil or chemical engineer with 5 years experience in sewage, stream pollution or industrial waste; 3 years as supervisor. $8031—8830 yearly.

ELECTRICAL MAINTENANCE ENGINEER 25-55 years. Graduate electrical engineer with 2 years in maintenance, layout and design. $6434—7232 yearly.

WATER SUPPLY ELECTRICAL ENGINEER 25-50 years. Graduate electrical engineer with 5 years experience servicing high voltage electrical equipment. $7232—8031 yearly.

To EMPLOYERS Who Advertise for MEN:

Frequently, when there are many applicants for a position, only the most promising letters are acknowledged. The other applicants never know whether their letters reached a prospective employer or not. These men often become discouraged, will not respond to future advertisements and even question their bona fide character.

Every Advertisement Printed in the Employment Section Is Duly Authorized.

You can help keep our readers interested and get better returns to your advertising in this section if you acknowledge each reply—in plain envelopes, if you wish.

Classified Advertising Division

McGRAW HILL PUBLISHING CO., INC.

"Put Yourself in his place."

ENGINEERS

PERMANENT OPENINGS FOR QUALIFIED MEN EXPERIENCED IN THE DESIGN OR SPECIFICATIONS FOR

AIRPORTS
BRIDGES
BUILDINGS
HIGHWAYS
RAILROADS

PREFER GRADUATE REGISTERED ENGINEERS WHO SEEK LONG RANGE EMPLOYMENT WITH AMPLE OPPORTUNITY FOR PROFESSIONAL DEVELOPMENT AND ADVANCEMENT IN A STEADILY EXPANDING AND GROWING ORGANIZATION.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income and other benefits. Blue Cross & Blue Shield Available. Moving allowance.

Work will be in the general offices in St. Louis. Interviews can be arranged in Washington, D. C., and San Francisco also.

Please write fully, including salary data, to

SVERDRUP & PARCEL ENGINEERING CO.
ENGINEERS — ARCHITECTS
915 Olive St. Louis 1, Mo.

McKEE

IMMEDIATE OPENINGS FOR

EXPERIENCED DESIGNERS
of Pressure Vessels—Structural Steel
and
CHEMICAL ENGINEERS
Experienced in Refinery & Chemical Process Design
Also
MECHANICAL ENGINEERS
Experienced in Design of Sintering Machines and Heavy Steel Making Equipment & Machinery.

Send Resume & Photo to: G. Victor Hopkins
ARTHUR G. McKEE & CO.
2300 Chester Cleveland 1, Ohio

FIELD ENGINEER

Nationally known organization offers excellent opportunity for young civil engineer graduate. Engineering consulting and promotional work in highway and concrete fields. Location Ohio, Pennsylvania and W. Virginia area. Car allowance and expenses. Permanent position. Salary based on qualifications and experience.

P-1042, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED
APPLICATIONS FROM
ENGINEERING PERSONNEL

HIGHWAYS
BRIDGES
ARCHITECTURAL

Openings in Pennsylvania, Ohio, Maryland, West Virginia & Mississippi

DESIGNERS
DRAFTSMEN
FIELD ENGINEERS
INSPECTORS
CHIEFS OF PARTY
INSTRUMENTMEN

Career opportunities for individuals interested in professional recognition, ample opportunity for advancement based on merit, plus employee retirement plan, group life insurance, hospitalization, paid vacation and holidays.

EXPERIENCE REQUIRED
Mail Resume to Personnel Department

MICHAEL BAKER, JR., INC.
CONSULTING ENGINEERS
Baker Building
Rochester, Pennsylvania
or
Northside Station, Box 9997
Jackson 6, Mississippi

HIGHWAY DESIGN ENGINEERS

Opportunities in positions of responsibility for experienced highway design engineers.

Interviews arranged for qualified applicants only.

Forward detailed resume of experience, education and salary requirements to:

BUCHART ENGINEERING CORP.
Consulting Engineers
55 S. Richland Ave. York, Penna.

EXECUTIVE SALESMAN

WANTED—High caliber experienced construction machinery executive salesman capable of handling large volume accounts from inception thru development to closing and financing. A once in a lifetime opportunity for the right man.

P-1137, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

• POSITIONS WANTED
(Continued from page 92)

Canadian Civil Engineer—23—Single—With experience in industrial building and railway fieldwork desires foreign employment. PW-1074, Engineering News-Record.

Professor of Structural Engineering. 16 years experience teaching and industry, age 36, desires teaching position. PW-1079, Engineering News-Record.

Electrical Engineer: Recently unemployed due to completion of construction program and R.I.F. Thirty-five years experience all phases of electrical and mechanical construction and operation. Married, no children, free to travel. Excellent health. Layout and design. Prefer field and construction. PW-1094, Engineering News-Record.

Engineer B.S.C.E., 44, desires position in Central or Western Europe. Heavy experience in grading, paving, const., machy. and control. No design. 3 completed foreign contracts. Some French. $10,000 per annum minimum. Resume on request. PW-1058, Engineering News-Record.

Production Engineer: 7 years engineering and supervisory experience with manufacturer of prestressed concrete products. Desires similar position leading to Engineering Management. PW-1169, Engineering News-Record.

Graduate Civil Engineer, 29. 5 years experience heavy construction. Desires position with Consultant or Contractor. Preferable location northeast U. S. PW-1171, Engineering News-Record.

Civil Engineer—Ten years experience. Highway, Municipal, Industrial Design; Licensed California. PW-1151, Engineering News-Record.

Industrious Const. Engr., BSCE, 29, married, field exp. in oil refinery & chemical plt. const. desires challenging pos. in midwest. PW-1154, Engineering News-Record.

Office Manager—Accountant, 13 years experience home office and field accounting, including joint venture work; financial statements, costs, insurance, subcontracts—all phases construction accounting. Age 36, married, settled. Presently employed. PW-1153, Engineering News-Record.

Civil Engineer—33, BSCE. Desires position with Contractor. Experience with highway departments and field and office work for consultant. PW-1114, Engineering News-Record.

Resident or Field Engineer—Reg. P.E.— (Elec. & Mech.) Thermal & diesel plants, missile launchers, airfields, schools, industrials, communications. Design, construction & operating exper. PW-1116, Engineering News-Record.

Construction Supt. Broad experience in industrial, institutional, commercial building as supt., general supt. const. mgr. Available soon. PW-1110, Engineering News-Record.

Design Draftsman—7 years experience architectural and steel—reply for resume. PW-1109, Engineering News-Record.

United Kingdom or Europe. Engineering administrator-supervisor. Extensive overseas experience. PW-1175, Engineering News-Record.

Sales Manager—Chief Estimator. Struct. Steel, 37. Wide experience in sales, contract negotiations, pricing and cost analysis of bridges, multi-story buildings, power plants. Desires similar position with hard-hitting progressive fabricator. PW-1172, Engineering News-Record.

Construction Superintendent. Thirty years broad experience turnpikes, multi bridge projects, airports, heavy excavation, paving, foundations. Immediately available. Location Immaterial. PW-1162, Engineering News-Record.

Jacksonville Area—Sales Engineer, 40. Civil 17 yrs. construction background includes military, industrial, public works, contracting and sales. Established Florida resident currently contacting specifying agencies and contractors. Desires employment with firm interested in increasing sales in S.E. territory. PW-1163, Engineering News-Record.

Heavy Equip. Master Mechanic. Shop. Field. or Truck Foreman. Age 49, 26 yrs. experience maintenance, repair and rebuilding Shovels, Cranes, Dozers, Compressors, Trucks, etc. Expert Gas & Diesel Mechanic, good Operator, Rigger, Electrician. Completed 6 Foreign Contracts. Available March. Can bring crew. Have equipped pick-up, house trailer. Operating Engineers Union member. Locate anywhere. PW-1167, Engineering News-Record.

SEARCHLIGHT SECTION
CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured 7/8 inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
Write today, without obligation
WILSON *Engineering Corp.*
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

• BUSINESS OPPORTUNITY

Land Surveying—Old established business in Passaic County, N. J.; city and country work; owner 67 finds some of work too strenuous; will sell for $28,000 including 7-room home and office in nice neighborhood; might consider partnership. BO-1180, Engineering News-Record.

SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent
Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade.
A complete line of Engineering Instruments and equipment for field or office. Write for catalog NLR 93
WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
186 No. 12th St., Philadelphia 7, Penna.

ALL MAKES
REBUILT REPAIRS RENT REAL EXPERTS
BUFF

69 Day St., New York WOrth 2-3797

TRANSITS & LEVELS
Various Makes
NEW & REBUILT
Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.
INSTRUMENTS RENTED
Midwest Representatives: W. & L. E. Gurley.
Distributors—Filotenica Salmoiraghi
NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

LARGE ARIZONA HIGHWAY CONSTRUCTION COMPANY
Successfully engaged in highway construction, with annual capacity of over $5,000,000. Over $2,000,000 under contract. Can be purchased with personnel intact. Priced to sell. Financing can be arranged. Please supply evidence of financial responsibility with inquiry, by letter only.
FOR SALE
Richard E. Coe
105 Central Plaza Bldg.
3424 N. Central Ave.
PHOENIX, ARIZ.

GOV'T SURPLUS—NEVER USED
CEMENT & SOIL
Liquid Limit Machine

$15.00 VALUE $44
For measuring the plastic properties of soil and determining the moisture content of soils necessary to produce a stable mixture under various conditions as applied to road building, etc.
• Constructed in accordance with ASTM specifications.
• A complete unit with brass cup & grooving tool.
JOB LOT TRADING 53 Vesey St. NYC

WANTED
Used Vulcan No. 0, No. 1 and 50C STEAM PILE HAMMERS
Must be in first class condition. Give Serial Number, Location and Price in first reply.
W-1045, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

A LARGE AUCTION
CONSTRUCTION EQUIPMENT
SATURDAY, APRIL 11, 9:30 A.M., CHICAGO, ILLINOIS

LOCATION: The O'Neil-Winkelman Joint Venture equipment yard off the Illinois Toll Road, near the Elmhurst Rd. Turnoff. This is 20 mi. NW of the Loop, 5 mi. NW of O'Hare Airport, or 5 mi. S of Des Plaines.

EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT LIMIT, MINIMUM OR RESERVATION!!!!

DRAGLINES

Lorain L-820 Crane, S/N 15740, with Cat power, good; Marion 33M Crane-Dragline-Backhoe, fair; Buckets.

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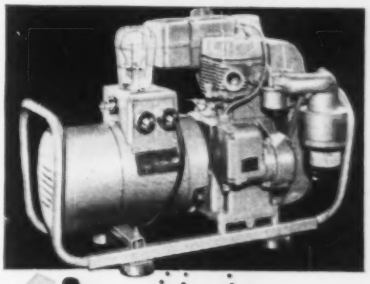

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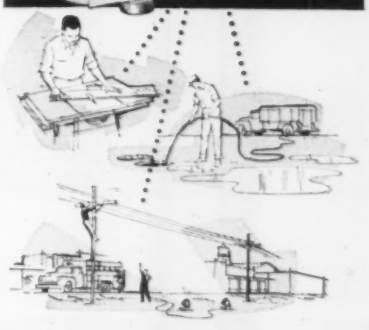

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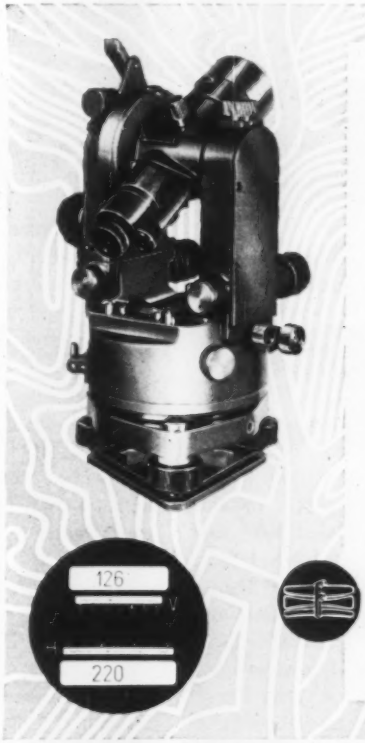

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Editorials

Surveying Is Engineering

NOW IT IS OFFICIAL. Four activities generally designated as surveying and mapping are definitely to be considered a part of civil engineering. The four are land surveying, surveying for design and construction, geodetic surveying and cartographic surveying. Certain aerial survey services and cartography, on the other hand, are not civil engineering. When photogrammetry is used for any of the four categories of surveying deemed engineering, it is, of course, an engineering procedure.

These policies were established as the Board of Direction of the American Society of Civil Engineers voted last month to adopt major recommendations of a Task Committee on the Status of Surveying and Mapping. Further, the Society's board declared that professional and technician (or pre-professional) positions within the four categories accepted as civil engineering should be classified as in the task committee's report.

The three-man task committee that came up with the conclusions and recommendations ASCE now has adopted began its work in 1954. It had two seemingly simple questions to answer: (1) Which surveying and mapping activities are professional and which are at technician level? (2) Which activities are engineering and which are not?

Its first report in 1955 defined "professional" and distinguished between the professional and the technician-level job classifications of surveying and mapping. That first report was hailed on this page as a Surveying and Mapping Division accomplishment that might be emulated by all divisions of ASCE, to the end that all civil engineering's present job classifications might ultimately be established at either professional or technician level (ENR Nov. 24, 1955, p. 164).

Having thus established what is professional in surveying (its classifications were well received), the task committee tackled its second question: What in surveying is engineering?

This one took longer. A first interim report recognized three activities as engineering, but recommended that land surveying be considered something separate.

The task committee sought and got wide circulation and thorough discussion of this recommendation, found more than half of those interested opposed to the distinction. A second interim report labeled land surveying an activity within civil engineering (ENR Jan. 2, 1958, p. 88). Last October the task group's final report got Surveying and Mapping Division approval, and now its major recommendations are accepted ASCE policy.

Development of this policy is recounted here to indicate how careful and thoughtful a process it was. Great credit is due Alfred O. Quinn, George D. Whitmore and Brother B. Austin Barry, the chairman, for their work on this task committee. It is to their distinct credit that the recommendations they made expressed the best thinking of the greatest number of interested parties it was possible to reach.

This committee's successful completion of its assigned task is not the end; it's only the beginning. In adopting the major recommendations, ASCE accepted a challenge to bring land surveying properly into the domain of civil engineering. A long, hard program of upgrading is indicated. Licensing laws will need changing; schooling of technicians as well as professionals in all phases of surveying and mapping will need improvement. The task committee made recommendations along these lines, too. They were referred by the board to ASCE committees on registration and education.

There is reason for cheer and for optimism. The status of surveying and mapping in the U.S., once in question, is now redefined. And there is hope that the future will see it put on a higher-than-ever plane.

Commuting Is Chaos

THE AUTOMOBILE WAS BLAMED for the commuter crisis and a mass-transport authority was cited as the best possible way to meet it in a well-done series on the local commuter problem in the NEW YORK TIMES last week. TIMES veteran Harrison E. Salisbury, the author, must have found the assignment as complex as any he ever handled in all his years as the paper's Moscow correspondent. But the Pulitzer Prize-winner produced a forceful word picture of the commuter crisis—its proportions and its complexities—that the general public should be able to understand. The series focused on New York City, but its information is of broad applicability.

The problem's dimensions were shown in numbers of people moving by mass transit and by private auto; its meaning was shown by examples like Los Angeles, whose streets would be completely clogged if every auto in the city tried to move at the same time. It was given color by Mr. Salisbury's polished prose.

The solutions, as might be expected, did not come through as clearly as the problems. Cures were found to exist, but they need direction, application. Engineers were disclosed to have methods in abundance. But political means for achieving solution were found inadequate.

Mr. Salisbury's reporting concludes that the city's commuter problem is too big for private enterprise to solve; it suggests the need for an authority with powers and money to forge a workable solution. That there is no easy solution, he makes clear. But in presenting the problem so thoroughly to the general public, the TIMES and Mr. Salisbury have given impetus to the needed drive toward solution of the chaos that characterizes commuting in New York and other major cities.

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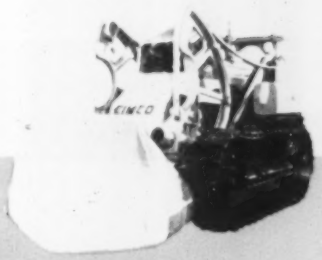

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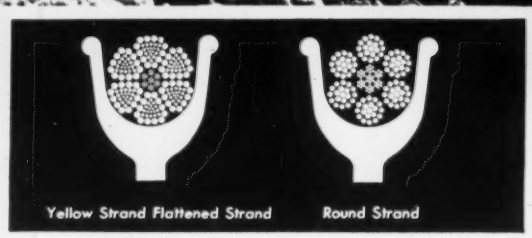

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